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A. P. BLESING,
Minister of Agriculture.

AGRICULTURAL VIEWS AND COMMENTS

Agricultural Bureau Conferences—1935.

Murray Lands (East), at Alawoona, Tuesday, October 1st (A. J. Pengilly, Secretary).

Eastern Eyre's Peninsula, at Butler, on Tuesday, October 8th (C. F. Jericho, Secretary).

Lower Eyre's Peninsula, at Yeelanna, on Wednesday, October 16th (R. R. Wilson (Secretary).

Central Eyre's Peninsula, at Wudinna, on Friday, October 18th (W. P. Bartley (Secretary).

Fruit (Non-irrigated), at Lyndoch, Tuesday, November 5th (J. S. Hammat, Secretary, Williamstown).

Each Conference will commence at 10.30 a.m. Members of Branches are invited to submit papers and questions for the agenda of the Conference in their respective districts.

Agricultural Shows.

We have been advised by Secretaries of Agricultural Show Societies that their shows will be held on the following dates:—

Laura, Wednesday, September 25th.
Eudunda, Wednesday, September 25th.
Gawler, Saturday, September 28th.
Balaklava, Saturday, September 28th.
Waikerie, Saturday, September 28th.
Karoonda, Wednesday, October 2nd.
Streaky Bay, Wednesday, October 2nd.
Murray Bridge, Friday and Saturday, October 4th and 5th.
Cleve, Saturday, October 5th.
Kapunda, Saturday, October 5th.
Peterborough, Saturday, October 5th.
Kadina, Saturday, October 5th.
Jamestown, Wednesday, October 9th.
Loxton, Wednesday, October 9th.
Strathalbyn, Wednesday, October 9th.
Penola, Wednesday, October 9th.
Yorketown, Wednesday October 9th.
Blyth, Saturday, October 12th.
Moonta, Saturday, October 12th.
Pinnaroo, Wednesday, October 16th.
Saddleworth, Wednesday, October 16th.
Mount Remarkable, Wednesday, October 16th.
Maitland, Wednesday, October 16th.
Kingston, Saturday, October 19th.
Clare, Saturday, October 19th.
Minlaton, Wednesday, October 23rd.
Mount Gambier, Wednesday and Thursday, October 23rd and 24th.
Burra, Wednesday, October 23rd.
Lucindale, Saturday, October 26th.
Southern, Port Elliot, Saturday, October 26th.
Tatiara (Bordertown), Wednesday and Thursday, October 30th and 31st.
Millicent, Saturday, November 2nd.

Sir Malcolm Campbell's **304·3** m.p.h.
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Agricultural Shows—*continued.*

Kingscote, Thursday, November 7th.
Oakbank, Saturday, November 9th.
Kalangadoo, Saturday, November 16th.
Angaston, Saturday, February 29th, 1936.
Mundalla, Wednesday, March 4th, 1936.
Mount Pleasant, Thursday, March 19th, 1936.

AGRICULTURAL INQUIRIES.

[Replies supplied by Mr. R. C. SCOTT, Supervisor of Experimental Work.]

Californian Cape Barley for Malting.

Pygery Agricultural Bureau asks: "Is Californian Cape barley a suitable crop for the Pygery district and what is its quality for malting?"

Reply—The opinion gained as a result of a series of experiments with Californian Cape barley is that a district with mild finishing conditions is necessary if good quality grain is to be harvested. This means that if we are to obtain a Cape barley capable of competing on the English market, we will be more or less confined to those districts which are known to produce good malting grain at the present time. Generally speaking, these districts are situated on Yorke Peninsula, Southern Eyre's Peninsula, south of Adelaide, Kangaroo Island, and the lower South-East. Consequently, it is not likely that the average rainfall and climatic conditions of the Pygery district will be suitable for the production of Californian barley of value for malting purposes. It might be added that there is practically no demand by Australian maltsters for this type of barley, but on the other hand large quantities are imported into England from California and North Africa for blending with the English Two-Rowed barley. Consequently, the object of the trials has been to ascertain whether we can produce barley capable of participating in this trade.

Kherson and Ideal Oats.

Blackheath Agricultural Bureau asks: "Are the oats Kherson and Ideal the same, and is Kherson a good hay variety?"

Reply—Kherson and the Ideal Grazing oat are different varieties. The former is an early ripening oat selected from Kherson, a Russian variety. This selection was made at Roseworthy Agricultural College and is usually known as Early Kherson. It is a heavy stooling oat with fine straw, but is not very tall growing. However, it is a variety capable of heavy yields of good quality hay. The Ideal Grazing oat originated in Victoria as the result of a selection made by a farmer in that State, but no particulars regarding its history are available.

Late Seeding of Cereals.

The Secretary of the Blackheath Agricultural Bureau reports that a member has 25 acres of fallow too wet to drill. Is it advisable to sow a cereal crop so late in the season?

Reply—It is now too late to recommend the planting of a cereal crop and the land should either be treated as fallow in preparation for wheat in the coming season or planted with Sudan grass for grazing purposes. If the latter course is adopted, it naturally means that livestock must be available to utilise the fodder produced. The best time to plant Sudan grass is as soon as the danger from frost is past, and in this case toward mid-September will probably be the most satisfactory. The grain may be sown through every hoe of the drill at a rate of about 12lbs. of seed per acre, together with approximately 1cwt. of superphosphate.

Ensilage v. Chaff for Sheep.

Yadnarie Agricultural Bureau asks: "Which has the higher feeding value for sheep—ensilage or oaten chaff?"

Reply—For lambing ewes ensilage is to be preferred to oaten chaff, as it practically takes the place of greenstuff so far as the production of milk, development of the lamb, and delivery of the lamb is concerned. On the other hand, for the maintenance of the flock during times of drought oaten chaff is more easily handled and is to be preferred. The amount of each required to supply the requirements of a fully grown sheep will vary according to the quantity of roughage in the field. If little other feed is available, 1½lbs. to 2lbs. of oaten chaff or 4lbs. to 4½lbs. of ensilage per head per day is necessary. On the other hand, if other picking can be obtained, these figures may be approximately halved.

Lucerne Flea.

"Wolseley" asks for treatment for lucerne flea control.

Reply—Lucerne flea may be destroyed by spraying with a lime sulphur solution made up at a strength of 1gall. lime sulphur to 60galls. of water. The lucerne should be grazed or cut and then treated with the solution, choosing a bright sunny day for the purpose if possible. Approximately 100galls. will be required to dress an acre of land. The time of application is most important, and the first treatment should be *given shortly after the first hatching in autumn, which is usually in April or May,* according to the season. You then destroy the insects before they have commenced to lay, but at the present time there are numerous eggs in the ground at various stages of incubation, which the spray cannot affect. Consequently, repeated sprayings at about three-weekly intervals are necessary to keep the pest under control. With the approach of warmer weather, hatching ceases and the fleas disappear, but in future years a watch should be kept for their appearance in late autumn or early winter and the first spraying given a week or so later.

Subsidised Bulls.

Replying to the Secretary of the Chandada Branch of the Agricultural Bureau, who asked for information concerning the purchase of subsidy bulls, Mr. P. D. Jeffrey (Chief Clerk of the Department of Agriculture) says when once the buyer decides from whom he will purchase, and which bull he wants, the Department will supply forms of declaration for both the seller and the buyer to fill in and sign. When the declaration forms are returned to the Department arrangements will be made for the tuberculin test of the bull and the type and valuation examination. It will also be necessary for the bull to be accepted for herd book registration, and that he is from a dam which, under official test, has produced the required amount of butterfat. When the Department is satisfied that the bull thus meets all requirements of the regulations, it will forward the first instalment of the subsidy to the buyer.

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Black Cherry Aphis.

"Kalangadoo" reports that cherry trees in his garden are attacked by black aphis.

Mr. A. G. Strickland (Deputy Chief Horticultural Instructor) in reply, says black cherry aphis is closely related to the green peach aphis, and overwinters in the egg stage among leaf and fruit buds. A winter tar distillate spray, applied in late June or July, will destroy such eggs and prevent or considerably reduce the potential spring hatching. Tar distillate may be obtained from leading spray manufacturing firms, and the strength at which each particular brand should be used (usually about 30 per cent.) will be found on the container. It should be noted, however, that the season is now too far advanced to permit the use of this winter spray; it may only be applied whilst trees are dormant, and if used at this juncture would be liable to seriously injure trees. Keeping in mind for next season the fact that a dormant spray as above indicated is the most effective means of reducing the spring infestation, this may be controlled to some extent by periodic spraying with white oil emulsion or nicotine sulphate (40 per cent.), 1¼ pints in 80galls. (plus 3lbs. soap).

Sodium Chlorate for Killing Weeds.

Replying to a correspondent at Mannum, who asked for information concerning the use of sodium chlorate for killing weeds, Mr. R. C. Scott (Supervisor of Experimental Work) said the sodium chlorate solution used for the destruction of weeds is usually made up at the rate of 1lb. of sodium chlorate to 1gall. of water. This is sprayed over the foliage of the plants and the effect is noticeable within a few hours. The above ground growth is usually totally destroyed at the end of 7 to 10 days, but the period before the plants die depends upon the age and class of plants being treated. In the case of a well-established stand of a weed, such as Convolvulus, which has underground stems, it may mean four to five applications spread over a period of about two years before all plants are completely destroyed, whereas annuals with fleshy leaves may be destroyed by a single treatment. Therefore, much depends upon the type of plant which it is desired to eradicate. However, provided that the treatment is both thorough and regular, there is no doubt that sodium chlorate is effective in destroying deep rooted and persistent weeds.

VETERINARY INQUIRIES.

[Replies supplied by Veterinary Officers, Stock and Brands Department.]

Strathalbyn Branch asks: "What is the earliest age at which lambs can be dosed for worms?"

Reply—Usually lambs do not require drenching before they are three months old, but in some cases it may be necessary to drench earlier if they show symptoms of scouring, anaemia, or swelling about the lips, which symptoms are indicative of internal parasites.

"Lenswood" reports cow, due to calve in a month, having partly lost the use of her hindquarters.

Reply—Place in a well-bedded stall. Procure from a chemist 4ozs. fused calcium chloride. Directions for use:—Dissolve 1oz. in cold water and give as a drench night and morning for two days. Feed on plenty of green feed and also give dry feed as follows:—*Bran, 4lbs.; oats, crushed, 4lbs.; chaff, 12lbs.* In the dry feed put 3ozs. of the following mixture twice a day:—Superphosphate and common salt, equal parts.

Koppio Branch asks: "Whether the killing of trees, yaccas, &c., with weed killer would have any ill-effect on stock running in the paddock while foliage is drying or wilting?"

Reply—Weed killer solution usually contains arsenic in its most dangerous form, and it would be extremely dangerous to the health of stock to allow them to have access to herbage which has been treated with such solution. This Department has

ecorded several instances where the deaths of stock have resulted from their getting ccess to herbage that has been some time previously treated with arsenical weed killer 3lution.

"Kulde" reports sheep with colds. They cough a good deal and some have died.

Reply—It would appear that your sheep are infested with lung worms. There is sually no difficulty in detecting the presence of these parasites on making a *post mortem* examination on a dead sheep if you split open with a knife or pair of scissors the bronchial tubes right down to where they divide into a series of small tubes branching off into the lung tissues. There is no remedial treatment for these parasites, though liberal feeding of the sheep to sustain their strength will help considerably in combating the ill-effects of these worms. As a rule, where sheep are infested with the lung worm, they are, at the same time, infested with other stomach and intestinal worms, though, as these are small in size, they are not so readily detected. Drenching the sheep will help considerably to reduce the degree of infestation with these and so give the sheep a better chance of keeping up against the lung worms. If, therefore, on making a *post mortem* examination you do find the lung worm, I would recommend you to drench the sheep and see that they are liberally fed. There is no need to starve the sheep before dosing them. (The Stock and Brands Department has available a leaflet giving instructions for the above drenching.)

"Marama" reports a foal blind during night, although its sight is normal during the day.

Reply—The condition of "night blindness" may be associated with general systemic weakness, in which case building up the animal's strength may effect an improvement. The condition may also be associated with diseased condition of the lens or retina (*i.e.*, the curtain at the back of the eye on which the rays of light fall) of the eye itself. In such case, treatment is hopeless.

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95-97 NORTH TERRACE, ADELAIDE.

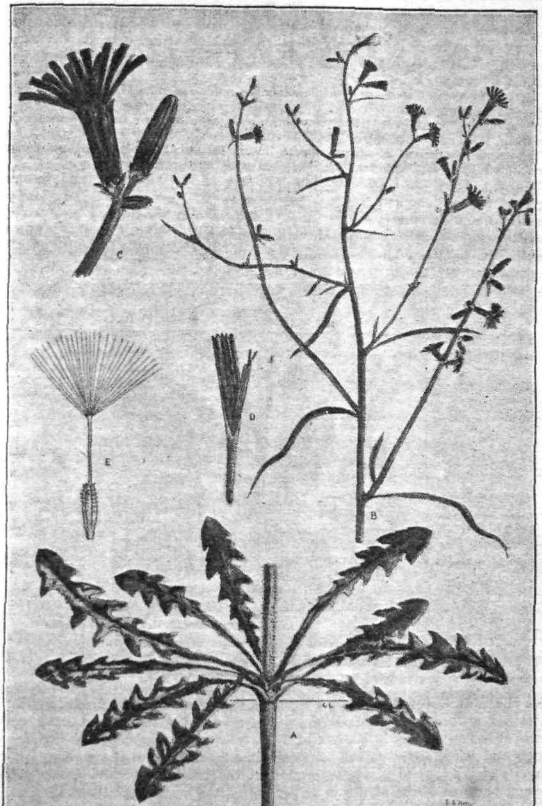
SKELETON WEED (*CHONDRILLA JUNCEA*, L.); A POTENTIAL MENACE TO THE SOUTH AUSTRALIAN WHEAT FARMER.

[By G. H. CLARKE, B.Sc., Botanist at the Roseworthy Agricultural College.]

As far as is at present known, Skeleton Weed does not yet occur in Australia outside of New South Wales, but there is every possibility that it will make its appearance sooner or later in this State if very strict precautions are not taken to guard against its introduction. The importation of seed wheat, or of other material likely to contain foreign seeds, from districts where the weed is bad, offers perhaps the most likely method of entry, but the spread of the weed in a westerly direction from seed carried by floodwaters is also to be anticipated, so that its future presence in the Murray Mallee area is far from improbable.

The serious view which is being taken with regard to this weed is indicated by the fact that, at the present time, a reward of £5,000 is being offered by the New South Wales Government in return for a practicable method of its eradication from the wheat lands of that State. The first record of its naturalisation was in 1917 at Marrar. Since then it has come to occupy extensive areas throughout the Riverina and South-western slopes of New South Wales. The plant is a native of Europe, throughout which it has a very wide range, and from which it has been introduced into parts of America. In both countries it is known by such names as "Gum Succory," "Skeleton Weed," and "Naked Weed." It is essentially a weed of cultivated ground, and it seems to thrive best under conditions where the method of bare fallowing is practised; hence the serious nature of the pest to the Australian wheat farmer.

Unfortunately, during its earlier stages of growth, Skeleton Weed does not differ greatly in habit and appearance from a number of other members of the Chicory tribe (*Cichorieae*) of the *Compositae*, the family to which it belongs. Species of Dandelion (*Taraxacum*), Cat's Ear (*Hypochoeris*), Hawkbit (*Leontodon*), &c., and also many *Cruciferae*, have a somewhat similar leaf form in the early or *rosette* stages. On this account young plants of *Chondrilla juncea* are apt to escape recognition, and are liable to be confused with other, and relatively harmless, weeds of similar appearance. In the later stages, however, the plants have a bare, wiry-stemmed structure, which is very characteristic, and to which the names "Skeleton Weed" and "Naked Weed" are due. The same bare appearance is to be seen in the case of old plants of Wild Chicory (*Cichorium Intybus*, L.), which, perhaps, most nearly resembles Skeleton Weed in this respect, though it is coarser, and has much larger heads with pale-blue, instead of yellow, florets. It is worthy of note that the name *Chondrilla* is derived from a Greek word meaning "Chicory," of which the word "Succory" is a corruption, and that both *Chondrilla* and *Cichorium* are members of the same tribe. The specific name *juncea* means "rush-like" (*i.e.*, like *Juncus*, the chief genus of Rushes), and doubtless refers to the broom-like appearance of the full-grown plants. The appearance of Skeleton Weed at different stages of its growth is shown in the accompanying illustrations, all of which have been taken from the August (1935) number of the *Agricultural Gazette* of New South Wales. The two photographs on pages 172-173, showing the plants growing in the field, are from an article in that journal by Mr. C. J. Daley, Sheep and Wool Instructor, N.S.W., in which the raising of fat lambs is suggested as an alternative to wheat-growing on Skeleton Weed country.



[*From N.S.W. Agricultural Gazette.*]

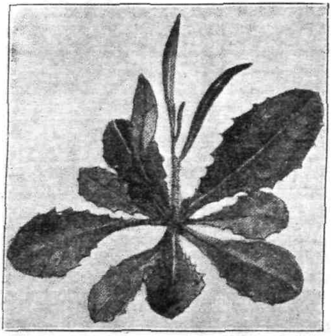
Skeleton Weed (*Chondrilla juncea*).

A—Basal leaves, showing root system and lower part of stem with bristles. B—Portion of plant, showing upper narrow leaves. C—Two unexpanded and one fully expanded flower heads. D—A ligulate floret. E—Fully developed muricated seed with stalked parachute-like pappus.

Botanically, the genus *Chondrilla* is characterised by having flower-heads with an involucre of 8-10 nearly equal bracts arranged in a single whorl, and provided at the base with small herbaceous scales, and with few (7-12) contained florets, and by the cylindrical-oblong fruitlets (*achenes*) bearing, towards the summit, a crown of scales surrounding the base of a filiform beak which supports the pappus of simple hairs.

**Description of C. juncea.*—A deep-rooted biennial or perennial, 15in. to above 3ft. high, erect, glabrous, hispid below, almost leafless when mature, with numerous slender rigid spreading branches; lower leaves sinuate or runcinate, usually withered at flowering, the upper ones entire; heads small, subsessile, solitary or in distant clusters of 2-3 on the branches; involucral bracts linear, somewhat mealy; achenes muricate, surmounted by a small crown of 5 elongated scaly teeth; florets yellow.

Skeleton Weed is troublesome on account of its perennial and extremely vigorous root system, and the fact that its growth is favoured by just those very conditions and farming methods which are most suitable for the production of cereal crops, especially wheat. Growth commences in winter, during which the plants form rosettes of leaves close to the ground. These leaves vary a good deal in shape, but are mostly pinnately toothed or lobed, and often runcinate, that is,



[*From N.S.W. Agricultural Gazette.*]

Skeleton Weed in early stages of growth.

Local and seasonal conditions often result in the basal leaves being narrower and more deeply serrated.

with the lobes directed downwards towards the base of the leaf. Later, there is developed an erect branching stem with slender entire leaves and small distant heads of yellow flowers in clusters of 1-3. After flowering the stems become very tough and wiry, and eventually appear almost bare due to the withering of the leaves and bracts, and to the separation of the "seeds" or fruitlets. The above-ground portions of the plant die at the end of the autumn, but, by this time, the root system is established deeply in the soil and is ready to produce new aerial shoots. The rootstock is extremely viable and, even after being broken up by the farming implements, the fragments survive and are capable of giving rise to a new aerial growth Thus, while it may be possible to destroy seedling plants by cultivation, this process has very little eradicative value when the root-system has developed. Under these conditions cultivation merely spreads the weed and increases the density of infestation.

*Based upon the description by L'abbé H. Coste in his *Flore Descriptive et Illustrée de la France*, Vol. II, Paris, 1903.

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The Band is actually a double trap, as it not only traps the grubs in the corrugations lying immediately next to the trunk of the tree, but a similar number are trapped and killed in the second series of small passages which are formed by the smooth outside section of the Band against the corrugated section.

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While, therefore, the spread of the weed takes place, in the first instance, by seed, subsequent invasion and spread on cultivated lands appears to be due mainly to tillage operations. According to Mr. E. S. Clayton, Senior Experimentalist of the New South Wales Department of Agriculture, it has been observed that, in long narrow paddocks, where the cultivations are all lengthwise with the paddock, the weed is spread lengthwise, not crosswise, and that where the weed occurs on one side only of such a paddock, it is often possible to confine it to that side, despite frequent cultivations and the spread of the plant in a lengthwise direction.

Not only does Skeleton Weed resist ploughing and repeated cultivations, but it can also withstand heavy grazing on stubble and fallow. In its early stages of growth it is said to be greatly relished by sheep and to provide useful fodder, though not, of course, a complete ration in itself. Thus, the raising of fat lambs has been suggested as an economic proposition on land which has become so densely infested with Skeleton Weed as to be unsuitable for wheat growing. The article by Mr. C. J. Daley, already referred to, deals with this aspect of the Skeleton Weed problem.

[From N.S.W. Agricultural Gazette.]

A paddock of Skeleton Weed in an advanced stage of growth. This rank, unpalatable growth is useless for sheep.

(After C. J. Daley.)

It is believed by some that *Chondrilla juncea* exerts some injurious influence over plants, especially wheat and oats, growing in its vicinity, since such individuals usually appear weak and sickly when growing in and around patches of Skeleton Weed. Whether this is due to the exudation of some harmful substance into the soil, or, as seems more likely, to the deprivation of the crop plants of water and necessary minerals by the more efficient root-system of the weed, is not known. On the other hand, some deep-rooted perennials like lucerne, when once established, appear to be able to compete successfully with Skeleton Weed, the growth and spread of which are not nearly as vigorous on land not subject to frequent cultivations. From their experience at the Wagga Experimental Farm, N.S.W., Messrs. Ross and Taylor are of the opinion that lucerne growing offers a valuable means of controlling the growth of this weed.

The eradication of Skeleton Weed is a problem which awaits solution. While the use of chemical exterminators on a large scale seems to be ruled out by the high cost, amounting to from £4 to £5 per acre in the case of even moderate infestations, it is possible to get rid of small patches by means of chlorate sprays. From the South Australian point of view it is of extreme importance that this weed be recognised early, should it appear in this State, so that eradication can be effected before it has secured a firm footing, and while it is possible to do so

[*From N.S.W. Agricultural Gazette.*]

At this stage Skeleton Weed can be grazed with sheep. The land shown in this illustration has been abandoned for wheat growing.

(After C. J. Daley.)

with comparative ease and with a minimum of expense. A sharp look out should therefore be kept by farmers in all parts of the State. Any unfamiliar weed, and especially one conforming to the above description, should be forwarded at once for identification, so that eradication measures, if required, can be undertaken in time. In the mean time precautions should be taken to prevent the importation and distribution throughout the State of materials likely to be contaminated with seeds of Skeleton Weed.

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GRASSHOPPER CONTROL.

WORK OF THE RENMARK IRRIGATION TRUST.

The following statement is compiled from a report of the action taken by the Renmark Irrigation Trust to combat the outbreak of grasshoppers which occurred early in 1935.

The Grasshoper Investigation Committee, appointed by the Government and to whom a copy of this report was forwarded, was very much impressed with the work done at Renmark, and at its suggestion a *résumé* of the report is published to show that what was done at Renmark could be followed with advantage in other districts in cases of invasion.

On or about 9th January, 1935, the discovery of a grasshopper egg bed was reported on a property on the Block E settlement. A circular was at once prepared, notifying all farmers of the potential danger, and reference was made to the Noxious Insects Act of 1934, under which it was compulsory for all landholders to search for breeding grounds, and when hatching commenced to follow up with destructive measures. To this circular was attached a reprint of a pamphlet issued by the Department of Agriculture outlining control methods.

On 15th January, Mr. Ingerson, of the Council for Scientific and Industrial Research, addressed a meeting of the Block E Branch of the Agricultural Bureau and spoke on the steps that had been taken in Mildura to combat the pest.

Subsequently, a local committee was formed. On 16th January the committee interviewed the chairman and members of the Renmark Irrigation Trust and urged the introduction of immediate action.

Mr. J. H. M. Price was appointed director to superintend operations, and in the course of a report to the Trust outlined the measures taken by the committee.

DUTIES OF OVERSEERS.

1. The residence of each overseer to be a depot for poison bait.
2. The overseer to see that sufficient bait was always on hand.
3. To see that bait was properly mixed.
4. To inspect all lands in his area.
5. To notify all growers where young hoppers were found and instruct them how to obtain bait and how to spread it.
6. To inform him of his responsibilities under the Act if he failed to comply with the regulations.
7. To warn all growers to remove all livestock from poisoned areas.
8. To enter the name of the occupier of each infested area in a notebook.
9. To keep in touch with each occupier of infested area until such area was cleaned up.

To give each overseer the proper authority to act, each one was furnished with a certificate under the Noxious Insects Act, 1934, by the Renmark Irrigation Trust No. 1, and a copy of the Act was handed to each overseer.

Poison was taken to one of the worst infested areas and a practical demonstration was given in what to look for, how to look for, and how to poison the hoppers. The necessary steps were then taken to insure an adequate supply of the various ingredients for the poison bait. It was decided by the committee to hold weekly meetings for the purpose of comparison.

PRESS.

At the commencement of operations it was realised that little could be done unless the committee had the full support of all growers. The aid of the local press was enlisted with the object of breaking down the apathy which was inevitable. On several occasions a reporter was taken on the full round of the overseers, existing conditions pointed out, and stress laid on the fact that little good could be done unless all co-operated. Fortunately the reporter realised the position and rendered great assistance, with the result that the work was to a great degree simplified.

MEETING OF OVERSEERS.

Comparisons of methods were discussed and the following system was agreed the best and so adopted by all overseers. The method was as follows:—

Upon learning that a ground was infested the name was placed in a book kept for the purpose, this book being ruled into columns, with the days of the month numbered

Plague Grasshoppers in the Wingless Stage. (Note character of soil surface).

at the top of each column. The date of discovery was marked off with a cross; in the folio it was marked as to condition of infestation, light, heavy, or medium, &c. The grower was then instructed when to call again for poison and when he did so a further cross was made in the date column. It was thus a simple matter to ascertain if growers were standing up to their obligations. If it was found that a g ›wer was negligent—and it was quite a simple matter to do this by glancing down the date column of the book—then that grower was called upon and the seriousness of his neglect pointed out to him and a polite warning given.

Discussion also took place on the habits of the young hoppers. It was readily agreed that the poison was doing a very satisfactory job, and gratification was felt at the success already achieved.

POSITION DURING SECOND WEEK.

A rather alarming increase was reported in the quantities of hatchings over all areas, but the results and experience gained during the first week gave the overseers confidence in the means at their disposal and they fairly revelled in their tasks. One of the worst areas encountered, a paddock of 10 acres, was very badly infested; in fact at one end it was simply a seething mass. In this case the pest was burnt off off and poison laid every day for over a week before the position showed signs of improvement. Over the whole of the area this week provided the crisis and when the strength of the poison was increased, more definite results were gained. During this week the work of the overseers was very heavy, and it is to their credit that each man stuck to his task when things were not looking too happy.

SECOND COMMITTEE MEETING.

Overseers were in accord that since the strength of poison had been increased more definite results were obtained. It was felt that another week would make a big difference. Time bore this out, and at the end of the third week the whole of the area was practically cleaned up, and with the addition of one or two extra days for some of the overseers, the settlement was pronounced clean by the end of the first week in February.

OBSERVATIONS ON THE PEST.

Contrary to general belief, there is no indication as to the egg beds before hatching unless the grasshoppers were noticed laying the eggs. Later experience showed us the most suitable places to look. The young hoppers remained in the vicinity of the hatching ground for approximately three days; this was the time to poison them. Hoppers kept emerging from the same bed for 14 days. This is the strongest argument against spraying with kerosene emulsion, because the spray only killed those which came into actual contact with the mixture.

AVERAGE EGGS IN EACH HOLE.

This varied from 40 to 80. Number of holes per square foot; the highest count was in the vicinity of 1,400; counts of 500 to 600 were common.

EFFECT OF WATER.

At first it was thought that the eggs could be rendered infertile by submerging them in water; this proved a mistake. The lining surrounding the eggs is impervious to water; such watering only increased the humidity and hastened hatching. There appeared to be a definite relationship between watered land and the egg beds, *i.e.*, land that had dried to the right degree of dampness was selected for the laying of the eggs. Couch grass patches were the most favoured spots, lucerne patches and channel and headland ditches being next in popularity. The lighter soils appeared to hatch out earlier.

EXPERIMENTS CARRIED OUT.

1. Two or three day old hoppers were placed in a bottle with the poison bait; 100 per cent. kill was obtained in 12 hours.

2. A considerable quantity of young hoppers was kept in a bottle without food. The majority were dead in three to four days, 100 per cent. in five days. This bore out the statement that no danger was to be feared from the depastured areas surrounding the settlement, as the hoppers would remain near the hatching beds for three days and starve for want of green nourishment.

REASONS FOR STRENGTHENING THE ARSENITE OF SODA IN BAIT.

The arsenite of soda used at Mildura and which was used to compute the figures issued to all growers was at 80 per cent. strength; the arsenite supplied to this district was at 62½ per cent., consequently the alteration.

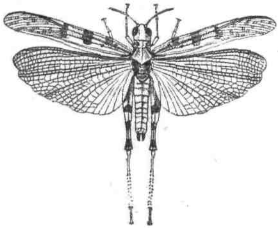
ENEMIES OF GRASSHOPPERS.

Birds, fowls, &c., accounted for a limited number of young hoppers. The chief enemy, however, was a very small black wasp which laid its egg in the egg of the grasshopper. This, of course, rendered the egg infertile.

OBSERVATIONS ON DIFFERENT METHODS OF COMBATING THE PESTS.

Cultivating the soil is useless unless done when the eggs are very young. Cultivating at a later period does not kill the eggs. They hatch out when they have been exposed to the sun for a short period.

Spraying is effective for small, thick colonies, but too expensive and slow for big areas, and it has the drawback of only killing by contact. Where eggs are hatching for a period of 14 days from the one breeding ground it is a waste of time.



[From *N.S.W. Agricultural Gazette*.]

Larger Plain Locust (*Chortoicetes terminifera*).

Top—Adult.

Bottom Right—Youngest stage of "hopper."

Bottom Left—Late stage of "hopper," with wing pads well developed.

Poison bait is the only way to treat any large area, or for that matter any area. It proved absolutely effective, is easy to mix, and easily and quickly spread.

Burning is of assistance where the hoppers are very thick, but it must be followed up by poisoning.

APATHY OF GROWERS.

At first, a little apathy was encountered amongst the old settlers. It can be taken as a rule—the dirtier the block the greater the apathy. The best way to counter this was to take them for a car ride to the worst infested spots in the area. It was quite a good study in human nature to watch the grin leave their faces. These men, after this treatment, became some of our best helpers.

If immediate steps had not been taken when the pest first appeared, considerable damage must have been the result, and it was only by the loyal and hard work of the

overseers that this was avoided. To them is due the greatest thanks; no hours were too long, and their first and last thoughts while they were on the job were—grasshoppers.

THE GRASSHOPPER MENACE.

The following is a copy of the circular sent to all farmers in the Renmark district by the Renmark Irrigation Trust:—

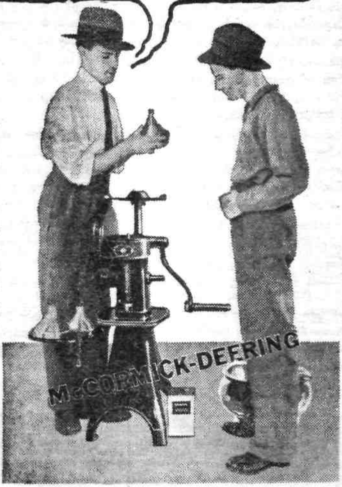
The plague of grasshoppers throughout this district, in common with most parts of the State, appears to be reaching a menacing stage, demanding immediate and combined action. The seriousness of the position lies in the wholesale breeding that is said to be in progress at present, which, if unchecked, is calculated to present a serious problem in the course of a week or two. Already young hoppers are to be found—the first fruits of what it is feared may be a heavy hatching. So momentous has the position become in parts of the State that the Government enacted special legislation to combat the plague. The new law requires all landholders to examine closely their properties for egg beds, to report the existence of breeding grounds to the district council for their district, in this case, the Trust, and to take all possible measures to ensure the destruction either of the eggs or the newly hatched hoppers. The breeding beds are usually small in area—a few square yards—and the eggs are deposited up to 3in. into the soil. The holes are usually capped with a silvery mucus somewhat similar to the hole of a trap-door spider, and may contain up to 60 or 80 eggs apiece. Following an investigation by a specially appointed committee, headed by Professor Perkins, the Government has issued a pamphlet setting out the measures to be taken. A copy is attached for your information and guidance.

The following is taken from a further circular issued by the Government to councils on the 10th instant:—

Comparatively little can be done against the flying swarms that are at present to be met with in various parts of the State. It is important, however, that some notice should be taken of the areas of ground over which these grasshoppers are depositing eggs, which will hatch out as soon as the combination of moisture and temperature is favourable, *i.e.*, that may hatch out during January or as late as early autumn, say, March and April. Landowners should be instructed to mark areas known to carry eggs so that they may be watched until hatching is apparent. In the meantime, if the ground is in such a condition that it could be stirred up with heavy cultivators, the councils should give instructions that this work should be carried out by landholders. Two or three workings given at 10-day intervals should prove effective. It is reported from Palestine that treatment of this kind, if well carried out, may lead to the destruction of 90 per cent. of the eggs, and thus save the landowners considerable trouble and expense in attempting to tackle the hoppers at a later stage. Should the hoppers hatch out early, say, in January, it is quite possible that they may die because of the absence of suitable green feed, but as a precautionary measure it is necessary that poison baits, as described in the leaflet forwarded to the councils, should be scattered carefully among the young hoppers. At this stage the areas could also be sprayed with kerosene emulsion quite satisfactorily. Fire might be used to destroy the hoppers, so long as the regulations are observed against fire outbreaks.

Under the new Noxious Insects Act *it is compulsory* for all landholders to search *breeding grounds, to mark and report any found to the Trust, and to follow up*
The arselestructive measures as outlined. Penalty, £20.
issued to all
trict was at 62½a matter as this, however, where the property and crop of each and every
ually endangered, we feel sure there is no occasion to emphasise the
ompt and concerted action.

IF YOU THINK CREAM SEPARATOR DISCS HAVE A SOFT JOB — JUST REMEMBER THESE FACTS:



A cream separator bowl spins at speeds ranging from 8,000 to 10,000 revolutions a minute. In the heart of the bowl scientifically designed discs direct the course of the whirling, swirling mass of milk, leading the cream to one outlet and the skimmed milk to others. The centrifugal force generated exerts an unbelievably heavy pressure on these discs.

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DEVELOPMENT OF OUR HILLS COUNTRY.

[*A Wireless Talk through 5CL by* MR. R. HILL, *District Agricultural Instructor.*]

During the last decade I have been in close touch with, and have endeavoured to assist in, the development of much of the land in counties Adelaide, Sturt, and Hindmarsh. These counties include that stretch of country extending from Mount Pleasant to Cape Jervis, which enjoys a good rainfall, has reasonably good transport conditions, social facilities, and is in close proximity to our markets.

The western portion of county Adelaide from Gawler to Willunga, and the eastern portion of county Sturt extending out to the River Murray, are occupied by farmers interested principally in cereal growing and sheep raising, and are not included in the area under discussion.

However, some statistical figures dealing with the livestock population of these three counties for the last decade should be of interest and some guide in ascertaining the future prospects of the better rainfall portions when the country is further developed, particularly from "the grass land" point of view. Briefly, the livestock population has shown the following changes during the last 10 years:—

Cattle—From 61,375 to 80,926, an increase of 19,551 head.
Horses—From 33,164 to 22,287, a decrease of 10,877 head.
Lambs—From 159,837 to 207,759, an increase of 47,922 head.
Sheep—From 406,299 to 589,844, an increase of 183,545.
Wool (excluding Lambs)—From 3,695,892lbs. to 5,916,163lbs., an increase of 2,220,271lbs., or per sheep from 9lbs. to 10lbs.

Pigs—From 20,613 to 23,248, an increase of only 2,635 head.

These figures are for the whole of the three counties. Taking County Hindmarsh alone, where practically all the conditions are more applicable to the area under discussion, the figures during the above period were—

Cattle—From 16,602 to 21,142, an increase of 4,542 head.
Horses—From 5,815 to 4,173, a decrease of 1,642 head.
Lambs—From 49,909 to 62,321, an increase of 12,412.
Sheep—From 143,746 to 196,921, an increase of 53,175 head, and an increase per sheep of approximately 1lb., now averaging a little under 10lbs.

Pigs—From 5,568 to 6,385, an increase of 817 head.

At a glance perhaps these figures do not indicate very much, but it must be remembered that they show steady progress during a period, for the last few years of which finance for developmental work of this kind has not been easily obtained.

The main factors responsible for the increases were superphosphate and Subterranean Clover, coupled with the subdivision of pastures into smaller fields. The matter of pasture management is important, and, unless good types of grasses, such as Perennial Rye Grass, Wimmera Rye Grass, and *Phalaris tuberosa* are introduced, the inferior annual grasses and weeds will take control as the growth of clover decreases.

Small fields are necessary in order to force even grazing by livestock, which has been proved to be very essential, particularly where sheep are on wet luscious pastures.

Rotational grazing, which allows quick changes on to fresh and sweet pastures, will provide the ideal in pasture management, and the application of the practice will help materially in the improved carrying capacity.

Although there is a large area of scrub yet to be cleared and converted into pastures, closer attention to pasture management on the land already cleared should not be neglected. The use of meadow hay and silage has been important in helping stockowners to carry more livestock and carry them better.

The area of pastures top-dressed with superphosphate in the three counties has increased from 28,407 acres to 82,065 acres, showing an increase of 53,658 acres. Meadow hay has shown an increase of 3,606 tons from 3,831 to 7,437 tons, and silage an increase of 1,071 tons from 2,409 tons to 3,480 tons.

A study of these figures shows steady development along sound lines in country which is right at our front door with a potential value which unfortunately has been too long despised.

Large areas of this country still remain in their virgin state awaiting development, and isolated cases of splendid pastures surrounded by scrub can be seen throughout the whole area.

One does not have to travel far to find numerous cases where individuals have in 10 years converted scrub land into pastures carrying, with good management, anything up to four sheep per acre, and there are tens of thousands of acres of scrub land still untouched and capable of being treated economically in the same manner.

On the other hand, large areas of partially developed land can be improved to the standard of that worked by the more progressive type of grass-land farmer.

Apart from the pasture work possible on virgin lands, the carrying capacity of the country can be increased considerably by the growing of cultivated crops, which will return high yields once the soil fertility has been improved, through the medium of well-grown pastures.

At the present time a large area of land is growing potatoes profitably, whereas less than 10 years ago it was considered of no practical value, and fortunately South Australia is able to produce its own requirements.

Several years ago in a talk similar to this I made reference to the possibilities of development in this country, and I feel more convinced to-day that experience gained in the past should give us confidence to undertake the development of such a valuable asset right at our front door.

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SPRAYS AND SPRAYING.

[*Address Broadcast from 5CL, 3rd September,* 1935, *by* MR. R. FOWLER, *Manager, Government Experiment Orchard, Blackwood.*]

Spraying is an operation vitally necessary for the production of payable crops of fruit and the more time, money and labour spent on pruning, cultivating, and manuring, the more necessary it is to insure the crop by spraying, because, after all, spraying must be looked upon as an insurance premium paid when the work is well done. It is generally too late to apply a spray when the damage caused by the insect or disease is apparent, as the object of spraying is rather to prevent injury, than to cure it.

In order to select sprays, and apply them intelligently, the fruit-grower should know something about not only the spray material he is going to use, but also something of the life history of the insect or fungus disease he wishes to combat, and the manner in which the spray might be expected to act upon it. Growers have now many opportunities of learning, as much literature is published by the various Departments of Agriculture, and these are available at little or no cost.

Broadly speaking, orchard trees and fruits are menaced by two classes of diseases—insect and fungus—and these in turn are, from the viewpoint of control by spraying, again divided into two types. In the first place, with insects, there are those which chew their food with their mandibles or jaws, such as beetles and the larvae of moths like the Codlin Moth; and secondly, those which possess long slender mouthpieces, which enable them to suck the juices from the plant by penetrating the foliage, bark and fruit, such as aphides, scales, and red spiders, etc.

The first named, the chewing insects, are best controlled by coating their food with a stomach poison, like arsenate of lead. The second class, which get their food by suction, are held in check with contact sprays, those commonly in use being Black Leaf 40, kerosene emulsion, red and white oil.

This second class of insects is, as a rule, sluggish, remaining stationary unless *violently removed. They cluster thickly on stem, leaves, and fruit, and can be* directly reached with a spray which will kill them by suffocation or internal irritation. This action of the spray will be better understood when it is pointed out that the respiratory system of insects is of the simplest description. They breathe, not through the mouth, but by means of tiny pores in the body, called spiracles, and if these pores are clogged with an oil spray, or irritated by strong fumes, death quickly follows. Nature provides these insects with some form of natural protection, sometimes in the form of a downy covering, like wool, a sticky resinous substance, or a waxy scale, and any spray directed against them needs to be driven with sufficient force to dissolve the outer covering to get at the insect beneath. Moreover, some contact sprays act as an ovicide, as in addition to killing the insects, they also destroy the eggs. Tar distillate washes have proved particularly useful in this way for the control of green aphis. Codlin Moth eggs are also destroyed when white oils are added to the arsenical sprays.

Then there are the fungus diseases, also divided into two types, and the methods of dealing with them vary with the different habits of each type. One class of fungi known as external or ephiphytic grow on the outside of the tree or plant, and absorb their food by means of suckers. Oidium of the vine is a typical illustration, and this class being always open to treatment is generally effectively controlled with flowers of sulphur or lime sulphur used during warm weather. The other class is known as the internal or endophytic fungus, the mycelium of which grows inside the plant, and cannot be reached by spraying. Most of the serious fungus diseases of the orchard belong to this class, represented by Black Spot of the apple and pear, Curl Leaf of the Peach, Shothole of the apricot, almond, and plum, and anthracnose and downy mildew of the vine. These

diseases generally become active in early spring, and must be attacked before they have a chance to become embedded in the living tissue. A Bordeaux or lime-sulphur spray applied when the flower buds are showing pink will generally be found a good protection in the case of all but the latter two diseases. In some localities more than one spray will be necessary, particularly in the case of Black Spot of the apple and pear.

SPRAYS.

Sprays are classed as insecticides or fungicides, according to the particular grouping under which they are used, some acting in both capacities. Insecticides are divided into (*a*) stomach poisons and (*b*) contact insecticides. The most commonly known stomach poison is arsenate of lead, and this is now almost universally used against all leaf-eating insects. It has proved the most effective remedy for codlin moth, but owing to the health regulations of various countries, which prohibit the importation of apples and pears carrying more than a certain amount of arsenical residue, efforts are now being made to find a non-arsenical substitute. Arsenate of lead is used against codlin moth at the rate of 3lbs. or 4lbs. powder or 6lbs. paste to 100 gallons of water. There is a popular belief that a stronger solution will give better results, and some growers use up to 8lbs. of paste, or more, to the 100 gallons, but whether it is economic to use the heavier concentration is very doubtful. Experiments conducted in other countries and at the Experiment Orchard, Blackwood, seem to indicate that stronger solutions do not give better results. Arsenate of lead contains very little soluble arsenic, which is injurious to fruit and foliage, and therefore it can be used in fairly strong concentrations. It stays in suspension well, and is not easily washed off by rain. It is most effective when applied against the young insects, caterpillars, and grubs, since the older the insects, particularly beetles, like Curculio, the harder they are to poison. It has also been demonstrated in New Zealand that the finer the particles the more effective the spray, and efforts are now being made to produce a colloidal arsenate of lead.

CONTACT INSECTICIDES.

These are effective against both groups of insects since they kill by contact, but they are used mostly against soft-bodied insects or sap-feeders. They are either corrosive, acting directly on the insect body, or fumigants acting through the breathing system. Those most in use in South Australia are nicotine suphate or Black Leaf 40, and miscible oils, both red and white.

Black Leaf 40, or nicotine sulphate, is one of the most efficient contact insecticides known, and quickly destroys aphides and young scales. Though fairly expensive, it is an economical spray to use, as it gives certain results. It is used as a strength of 1 part to 800 parts, and though sometimes applied alone, it seems to give better results when used in combination with soft soap: 3lbs. to the 100 gallons, or white oil, ¾ gallon per 100 gallons. It can be used at any time of the year. It also mixes without injury with other sprays, and can be used in combination with lime-sulphur, arsenate of lead, oil, or Bordeaux mixture. Red oil is also used as a winter spray, 1-20-25, for the control of aphides, scale, and red spider, and white oil in the summer, when red oil would cause injury to the foliage. Rainwater should be used to make the primary emulsions, and the directions of the manufacturers should be carefully followed. Severe agitation is not desirable when spraying with oil sprays, as there is a danger of breaking up the emulsion and clogging the pump.

FUNGICIDES.

Those in common use amongst commercial fruitgrowers are Bordeaux mixture, Burgundy mixture, and lime-sulphur. These sprays are applied, as previously stated, with the object of providing a protective coating to the developing leaves, and killing any fungus spores present on the plant.

Bordeaux mixture was discovered in 1882 by accident in a vineyard in France, and has since become the most efficient fungicide known, and the most widely used. Unfortunately, it is not safe to use this spray on apples after leaves and

fruit are formed, as it is apt to cause severe russetting, but it may be used on pears, provided a suitable strength solution is applied. For use in the winter, the generally recommended formula is 6 : 4 : 50 (6lbs. bluestone, 4lbs. fresh lime, and 50 gallons water); summer strength 3 : 4 : 50. There are many variations of these formulae, but they can be taken as a guide, and if desired, experiments can be carried out by the individual grower to determine the best mixture for his particular set of conditions, the object being to get the maximum control of the fungus with the minimum damage to the leaves and fruit. Methods of mixing are probably well known to all fruit-growers, but care should be exercised in this respect. It is generally recommended that too strong solutions should not be mixed together, but that one should be diluted in the full quantity of water, and then the other stock solution added, and it is thought better to dilute the lime solution, and then add the bluestone solution, than *vice versa*.

Burgundy mixture is sometimes used instead of Bordeaux, as good, fresh quicklime is not always available, and it is easy to keep on hand a supply of washing soda. The usual formula for Burgundy mixture is 4 : 6 : 50, but this may be varied, as in the case of Bordeaux. The relative efficiency of Bordeaux or Burgundy mixtures is still a matter of dispute. Burgundy mixture has been used almost exclusively for many years at the Experimental Orchard with satisfactory results. It appears to be more adhesive than Bordeaux, and less likely to choke the nozzles; but used in combination with arsenate of lead as a combined spray, it is likely to cause injury to the foliage. The fungicidal action of both these sprays is due to the slow liberation of soluble copper under the influence of atmospheric moisture. Lime sulphur sprays have been in use for many years, and are becoming more generally popular, particularly for the control of black spot of the apple and pear, owing to the fact that copper sprays are liable to cause russetting, if applied in the calyx stage, or later. An additional value in the lime sulphur is the fact that it also acts as an insecticide to some extent, and will control red spider. Investigations in New Zealand have shown that the fungicidal action of lime sulphur is due to the calcium polysulphide compound contained in spray. Lime sulphur may be used in the dormant season at the rate of one gallon to 10 or 15 of water; when the buds are unfolding, one gallon in 30 to 35; and when trees are in leaf, one gallon to 100 to 120. Good commercial brands of lime sulphur are fairly uniform in composition, the degrees Baume being guaranteed, but strictly speaking lime sulphur sprays should be tested with a hydrometer, to ensure reliability and avoid injury.

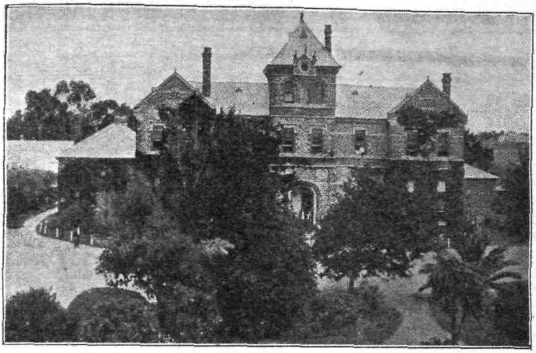
SPREADERS.

During recent years, many substances have been put on the market, designed to improve the adhesive properties of sprays, and to distribute more evenly the film of spray. For this purpose, soaps, oils, milk, &c., have been tried, but the only one which has come into general use is calcium caseinate, a manufactured by-product from the dairying industry. Whether the spreader is beneficial to the extent that is sometimes claimed is a matter for doubt. One pound of spreader is usually added to 100galls. of spray, but experiments in America go to show that ½lb. per 100galls. will give better results.

Spraying costs are a very important item in fruit production, and a careful study is necessary, of the relative prices of each spray material, so that the grower may choose those sprays which are most efficient, yet keep his costs within economic limits.

In operation, it is important to see that the spraying is thoroughly done, even if there appears to be an apparent waste of liquid. The results will depend on whether the spray is applied to all parts of the tree where needed. Consideration must be given to the particular disease that is being treated. If it is a fungus disease, a general coating of leaves and fruit should be aimed at, if codlin, the calyx and fruit should receive particular attention.

Spraying is usually a disagreeable job, but nevertheless, it is a very important one.



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JUNIOR TWO-YEAR-OLDS—

Herd Book No.	Name of Cow.	Owner and Address.	Breed.	Calved.
44811	Lanacoona Brown May	C. E. Verco, Mount Compass	Jersey	24/6/34
46533	Tuela Strelitzia	F. Coleman, Saddleworth	"	8/7/34
44807	Lallawa Chieftain's Diana 2nd	Mrs. A. Bowman, Meningie	"	16/6/34
Not allotted	Glen Ewin Columbine's Fancy 3rd.	Jas. McEwin, Houghton	"	24/4/34
46525	Tuela Geranium	C. E. Verco, Mount Compass	"	26/9/34
45955	Rivington Peggy	J. W. Crompton, Victor Harbour	"	8/7/34
44813	Lanacoona Wildflower	C. E. Verco, Mount Compass	"	10/8/34
46212	Stonyfell Briar	J. W. Crompton, Victor Harbour	"	15/6/34
Not allotted	Glen Ewin Coutance's Queen	R. J. Laing, Gumeracha	"	7/7/34
"	Tuela Snowgem	F. Coleman, Saddleworth	"	11/8/34
40150	Hampden Blonde's Jeanette	J. A. J. Pfitzner, Hampden	"	30/3/34
44260	Hampden Blonde's Crisette	J. A. J. Pfitzner, Hampden	"	21/8/34
Not allotted	Kiama Mayflower 9th	E. and A. Nicholls, Woodville	A.I.S.	11/9/34
"	Tuela Moss Rose	F. Coleman, Saddleworth	Jersey	7/7/34
"	Glen Belah Heather	E. O. Hancock, Andrews	Ayrshire	4/5/34
45182	Mira Chana Capture	H. B. Peters, Mount Compass	Jersey	14/6/34
Not allotted	Gambier Princess Olive	A. P. Spehr, Mount Gambier	"	2/9/34
46523	Tuela Dierama	F. Coleman, Saddleworth	"	26/6/34
Not allotted	Lallawa Twylish Carnation 2nd	Mrs. A. Bowman, Meningie	"	27/7/34
"	Kiama Honeycomb 2nd	E. and A. Nicholls, Woodville	A.I.S.	17/8/34
"	Oakhill Queen	L. W. Frost, Saddleworth	Jersey	9/9/34
7505	Tabbagong Beauty 22nd	J. M. Irwin, Mount Barker	A.I.S.	3/7/34
45642	Para Wirra Queen	J. H. Dawkins, Gawler	Jersey	29/5/34
46037	Roseworthy Princess 52nd	Agricultural College, Roseworthy	"	10/6/34
42748	Alexandra Mayflower	A. Kelly, Milang	"	4/7/34
Not allotted	Cudlee Creek Lady Jane 2nd	Mrs. W. A. Pool, Cudlee Creek	"	26/9/34
39503	Delma Noble Lotus	E. W. Pfitzner, Eudunda	"	13/5/34
Not allotted	Ontario Princess Millie	T. B. Brooks, Clarendon	"	27/8/34
40138	Gunawah Gold Thread	E. W. Pfitzner, Eudunda	"	6/7/34
Not allotted	Tuela Festuca	F. Coleman, Saddleworth	"	9/7/34
"	Para Vale Millie 3rd	A. J. Marrett, Saddleworth	"	23/9/34
"	Glen Belah Shirley	E. O. Hancock, Andrews	Ayrshire	5/8/34
42749	Alexander Royal Belle	A Kelly, Milang	Jersey	8/7/34
Not allotted	Palpara Flora	Mrs. C. E. Mayger, Kapunda	"	28/7/34
43580	Cumberland Countess	L. W. Frost, Saddleworth	"	12/6/34
41237	Navua Grose Lassie	R. J. Laing, Gumeracha	"	10/4/34
46032	Roseworthy Glimmer's Maid	Agricultural College, Roseworthy	"	7/6/34
45445	Ninyeri Dainty Miss	E. L. Goode, Narrung	"	2/7/34
Not allotted	Gambier Lady Beena	A. P. Spehr, Mount Gambier	"	5/7/34
44205	Greenoaks Cunning Lass	W. A. Mueller, Ambleside	"	9/5/34
Not allotted	Raglan Peggy	D. Fitzgerald, Edwardstown	"	24/9/34
41236	Navua Fascination	O. H. Woodward, Gilles Plains	"	20/5/34
Not allotted	Kiama Robin 5th	E. and A. Nicholls, Woodville	A.I.S.	19/7/34
39499	Delma Aristocratic Lady	E. W. Pfitzner, Eudunda	Jersey	9/4/34
Not allotted	Ontario Audrey	T. B. Brooks, Clarendon	"	2/8/34
45448	Ninyeri Queen	E. L. Goode, Narrung	"	23/7/34
45442	Ninyeri Beatrice	E. L. Goode, Narrung	"	10/9/34
Not allotted	Cudlee Creek Pretty Maid	Mrs. W. A. Pool, Cudlee Creek	"	21/8/34
"	Para Wirra Beauty's Daisy	J. H Dawkins, Gawler	"	19/9/34
"	Dunleith Millie 2nd	Dunleith Pastoral Co., Ashbourne	A.I.S.	27/8/34
"	Spring Park Pretty Maid	W. Nitschke & Son, Littlehampton	"	27/8/34
"	Morella Princess 2nd	H. R. Walsh, Mount Barker	Jersey	22/8/34
8279	Kiama Beauty	Calf Club, Sutton Town	A.I.S.	12/4/34
Not allotted	Park View Honeysuckle 13th	J. M. Irwin, Mount Barker	"	11/8/34
"	Channel View Dolly Grey	Mrs. A. M. Carruthers, Narrung	Jersey	13/8/34
"	West Kilbride Lilette	Insp.-General Hospitals, Northfield	Ayrshire	14/8/34
"	Pembroke Vanilla	Mrs. C. W. Ansell, Bolivar	Jersey	20/8/34
"	Kyby Snowlady	Govt. Farm, Kybybolite	Ayrshire	7/7/34
"	Kiama Pansy	Calf Club, Sutton Town	A.I.S.	17/4/34
"	Kiama Daphne	Calf Club, Sutton Town	"	13/6/34
24970	Glencourt Dinah 4th	Insp.-General Hospitals, Northfield	Ayrshire	5/4/34
Not allotted	Kyby Winnifred	Govt. Farm, Kybybolite	"	27/7/34

BETWEEN JANUARY 1ST, AND JUNE 30TH, 1935.

Age at Calving. Y. M. D.	Total Milk. Lbs.	Average Test. %	Total Butter-fat. Lbs.	Days Tested.	Sire.	Remarks.
BUTTERFAT STANDARD, 230LBS.						
1 9 7	7,901	5·44	430·08	273	Werribee Combination	—
2 0 2	6,759	5·94	401·49	273	Tuela Syra	—
2 0 20	6,759½	5·17	395·66	273	Chieftain 2nd of Dalebank	—
1 9 13	6,819½	5·77	393·57	273	Werribee Masterman	—
2 2 19	6,792½	5·79	393·28	273	Tuela Syra	—
1 9 18	6,576	5·62	369·27	273	Baxter of Banyule	—
1 11 23	6,736½	5·29	356·92	273	Werribee Combination	—
2 0 25	6,360½	5·39	342·99	273	Baxter of Banyule	—
1 10 7	6,900½	4·96	342·62	273	Werribee Masterman	—
2 0 15	5,731	5·88	336·99	273	Tuela Syra	—
2 0 2	5,601	5·95	335·45	273	Bellefaire Blonde's Aristocrat	—
1 7 20	5,983½	5·51	329·86	273	Bellefaire Blonde's Aristocrat	—
2 1 18	8,277½	3·95	326·92	273	Kiama Pembroke	—
1 9 27	5,660½	5·65	319·77	273	Tuela Syra	—
1 8 18	7,078½	4·52	319·90	273	Kyby Robin	—
1 10 8	6,297	5·04	317·34	273	Dalebank Noble Lord 6th	—
1 11 14	6,050	5·17	312·78	273	Hampden Olive's King	—
1 11 20	5,436	5·70	309·93	273	Hampden Winsome King	—
2 2 9	5,419½	5·54	300·31	273	Chieftain 2nd of Dalebank	—
1 10 14	8,250	3·62	298·98	273	Pembroke of Greyleigh	—
1 6 23	6,181	4·77	295·01	273	Delma Butter King	—
2 4 2	7,098	4·15	294·53	273	Park View Reward 2nd	—
1 10 26	5,539½	5·31	294·21	273	Para Wirra Millie's Pylon	—
2 2 24	4,600½	6·37	292·85	273	Roseworthy Pretty Duke	—
2 1 7	4,912½	5·96	292·71	273	Hampden Queen's Repeater	—
1 8 8	5,950½	4·88	290·63	273	Dalebank Producer 3rd	—
1 9 23	5,254	5·45	286·29	273	Dalebank Noble Duke	—
1 11 22	5,767½	4·96	286·07	273	Dalebank Viola's Duke	—
2 0 12	5,073½	5·62	285·36	273	His Grace (Imp.)	—
2 0 2	4,934	5·77	284·61	273	Tuela Syra	—
2 4 1	5,865½	4·85	284·31	273	Para Vale Lord Mac	—
1 5 13	6,192	4·58	283·48	273	Kyby Robin	—
2 0 28	5,443½	5·08	276·73	273	Bellefaire Blonde's Signal	—
1 11 27	5,317½	5·20	276·72	273	Wooroora King's Hero	—
1 8 4	5,157½	5·34	275·22	273	Silver Lad of Eudunda	—
1 11 21	4,496½	6·06	272·71	273	Navua Grose Lad	—
1 10 18	4,266	6·29	268·36	273	Roseworthy Pretty Duke	—
2 2 13	5,308½	4·98	264·41	273	Hampden Mayflower King	—
	5,707½	5·07	289·20	300		
1 9 26	4,860½	5·34	259·66	273	Hampden Olive's King	—
1 6 21	4,560½	5·66	258·34	273	Navua Cunning Lad	—
1 6 0	5,113	4·99	255·27	273	Glen Echo Kelly's Lad	—
2 1 23	4,414½	5·76	254·46	273	Wistaria Laddie	—
1 11 18	6,735	3·76	252·97	273	Pembroke of Kiama	—
1 9 6	4,561	5·52	251·78	273	Bellefaire Blonde's Aristocrat	—
2 4 22	5,316½	4·72	251·09	273	Ontario Millie's Twylish	—
2 4 9	5,049	4·97	251·07	273	Hampden Mayflower King	—
1 7 13	4,697	5·26	246·90	273	Hampden Mayflower King	—
1 8 5	4,559	5·40	246·38	273	Cudlee Creek Masterman	—
1 9 7	4,291½	5·64	241·96	273	Para Wirra Jack	—
2 1 8	6,712½	3·60	241·43	273	East View Sultan	—
	7,207½	3·64	262·19	300		
1 9 18	6,208½	3·88	241·05	273	Kiama Jack	
2 1 5	3,735½	6·45	240·98	273	Anemone's Chief 5th of Morella	—
2 5 15	6,889½	3·49	240·41	273	Viscount of East View	—
2 3 14	6,269½	3·81	238·70	273	Park View Don	—
2 0 26	4,740½	5·03	238·28	273	Channel View Prince	—
2 2 22	5,284½	4·49	237·36	273	Oakbank Classical	—
2 0 2	4,240	5·57	235·97	273	Twylish of Para Wirra	—
2 1 17	5,391	4·37	235·77	273	Gowrie Park Scottish Dandy	—
2 1 25	6,526½	3·60	235·06	273	Pembroke of Greyleigh	—
2 2 16	5,337	4·38	233·58	273	Liberton Freedom	—
1 10 21	5,613	4·15	232·84	273	Belle's Best of Glencourt	—
2 1 18	5,564	4·18	232·71	273	Gowrie Park Scottish Dandy	—

PURE-BRED COWS COMPLETED

Herd Book No.	Name of Cow.	Owner and Address.	Vreed.	Calved.
			JUNIOR TWO-YEAR-OLDS—	
46031	Roseworthy Fay 2nd	Agricultural College, Roseworthy	Jersey	10/6/34
Not allotted	Pembroke Lena Lotus	Mrs. C. W. Ansell, Bolivar	"	18/10/34
"	Dunleith Millie 3rd	Dunleith Pastoral Co., Ashbourne	A.I.S.	1/9/34
8492	Northfield Prince's Charm	Insp.-General Hospitals, Northfield	"	22/4/34
46036	*Roseworthy Princess 51st*	*Agricultural College, Roseworthy*	Jersey	1/7/34
46038	Roseworthy Schoolmistress	Agricultural College, Roseworthy	"	26/6/34
Not allotted	Pembroke Merle	Mrs. C. W. Ansell, Bolivar	"	18/8/34
"	Tabbagong Belle 9th	J. M. Irwin, Mount Barker	A.I.S.	16/7/34
"	West Kilbride Fairy	Insp.-General Hospitals, Northfield	Ayrshire	18/7/34
43584	Cumberland Princess Rhonda	L. W. Frost, Saddleworth	Jersey	14/9/34
Not allotted	Northfield Sunflower 3rd	Insp.-General Hospitals, Northfield	A.I.S.	3/9/34
46124	Scrub View Duchess	A. B. A. Weckert, Brinkworth	Jersey	14/8/34
8490	Northfield Melba's Janet	Insp.-General Hospitals, Northfield	A.I.S.	30/7/34
Not allotted	West Kilbride Felicity	Insp.-General Hospitals, Northfield	Ayrshire	18/7/34
45447	Ninyeri Princess	E. L. Goode, Narrung	Jersey	17/8/34
Not allotted	Channel View Nellie Grey	Mrs. A. M. Carruthers, Narrung	"	10/8/34
39501	Delma Blonde's Signpost	E. W. Pfitzner, Eudunda	"	27/4/34
Not allotted	Dunleith Gladsome	Dunleith Pastoral Co., Ashbourne	A.I.S.	9/9/34
"	Cudlee Creek Silk Sox	Mrs. W. A. Pool, Cudlee Creek	Jersey	8/8/34
"	Glen Ewin Roseleaf	Jas. McEwin, Houghton	"	22/11/34
"	Hampden Olive's Blondinette	J. A. J. Pfitzner, Hampden	"	23/8/34
"	Pembroke Fancy Lotus	Mrs. C. W. Ansell, Bolivar	"	17/8/34
"	West Kilbride Lassie	Insp.-General Hospitals, Northfield	Ayrshire	8/6/34
"	Pembroke Floss	Mrs. C. W. Ansell, Bolivar	Jersey	7/10/34
"	Albion Fifi	E. T. Vinall, Brighton	Guernsey	30/7/34
"	Kyby Ida	Government Farm, Kybybolite	Ayrshire	5/7/34
43585	Cumberland Sundew	L. W. Frost, Saddleworth	Jersey	17/8/34
43582	Cumberland Lily	L. W. Frost, Saddleworth	"	10/9/34
Not allotted	Para Wirra Maglona's Daphne	J. H. Dawkins, Gawler	"	13/11/34
"	Gowrie Park Posey	Insp.-General Hospitals, Northfield	Ayrshire	3/4/34
"	Northfield Janet's Princess	Insp.-General Hospitals, Northfield	A.I.S.	25/4/34
"	Dunleith Cheerful	Dunleith Pastoral Co., Ashbourne	"	9/9/34
"	Kyby Reveal	Government Farm Kybybolite	Ayrshire	18/7/34
"	Inman Countess	G. V. Rogers, Inman Valley	Jersey	16/11/34
46033	Roseworthy Lady 5th	Agricultural College, Roseworthy	"	13/6/34
45682	Pembroke Della	Mrs. C. W. Ansell, Bletchley	"	5/5/34
Not allotted	Gambier Peggy's Starry	A. P. Spehr, Mt. Gambier	"	1/10/34
Not allotted	Gambier Dinah's Dream	A. P. Spehr, Mt. Gambier	"	12/10/34
Not allotted	Pembroke Fairy Duchess	Mrs. C. W. Ansell, Bolivar	"	3/10/34
45184	Mira Chana Lucy	H. B. Peters, Mt. Compass	"	7/11/34
Not allotted	Glenlea Fairy	E. T. Vinall, Brighton	Guernsey	3/5/34
Not allotted	Gambier Una 2nd	A. P. Spehr, Mt. Gambier	Jersey	20/10/34
Not allotted	Anama Transvaal Twilight	W. Hawker, Clare	Friesian	6/9/34
Not allotted	Beetaloo Mystic Grey	Mrs. E. M. Johns, Daly Street, Sth. Plympton	Jersey	21/1/35
Not allotted	Sweet Haven Enchantress 2nd	J. M. Bray, Langhornes Creek	"	25/2/35
			SENIOR TWO-YEAR-OLDS—	
41545	Pella Viola Doone	C. E. Verco, Mt. Compass	Jersey	13/9/34
Not allotted	Glen Ewin Misty Morn	R. J. Laing, Gumeracha	"	26/5/34
45638	Palpara Silver	Mrs. C. E. Mayger, Kapunda	"	26/9/34
40624	Lakeland Silvette	R. J. Laing, Gumeracha	"	7/9/34
45183	Mira Chana Gem	H. P. Peters, Mt. Compass	"	5/9/34
42025	Stoneyfell Heather	J. W. Crompton, Victor Harbour	"	16/6/34
38621	Woodside Wonderful Maid	J. A. J. Pfitzner, Hampden	"	25/4/34
41442	Overlook Remus Spark	E. W. Pfitzner, Eudunda	"	27/8/34
46825	Xavier Valda 2nd	A. P. Spehr, Mt. Gambier	"	5/6/34
41443	Overlook Remus Sunny	J. A. J. Pfitzner, Hampden	"	27/8/34
42635	Wooroora Twinkles	A. Kelly, Milang	"	17/4/34
39478	Cudlee Creek Viola	Mrs. W. A. Pool, Cudlee Creek	"	6/4/34
41438	Overlook Remus Oxulla	E. W. Pfitzner, Eudunda	"	28/8/34
39504	Delma Spotlight	E. W. Pfitzner, Eudunda	"	25/9/34
34690	Wooroora Waffles	A. B. Sieber, Eudunda	"	11/4/34
41117	Morella Princess	H. R. Walsh, Mt. Barker	"	8/8/34
46531	Tuela Rose	F. Coleman, Saddleworth	"	11/8/34
39492	Dalkey Bonnie Lass	G. D. Oster, Balaklava	"	20/7/34
Not allotted	Lake View Melba 11th	J. M. Irwin, Mt. Barker	A.I.S.	25/6/34

OFFICIAL TEST—*continued*.

Age at Calving.	Total Milk.	Average Test.	Total Butter-fat.	Days Tested.	Sire.	Remarks.
Y. M. D.	Lbs.	%	Lbs.			
BUTTERFAT STANDARD, 230LBS.—*continued*.						
2 3 13	4,480½	5·13	229·89	273	Roseworthy Pretty Duke	—
1 11 3	3,847½	5·95	228·98	240	Pembroke Mischief	†
2 1 2	6,463½	3·53	228·03	273	East View Sultan	—
2 5 17	5,928	3·80	225·40	273	Northfield Limelight's Prince	—
2 3 17	4,500½	5·00	225·24	273	Roseworthy Pretty Duke	—
1 11 3	4,065½	5·46	222·06	273	Roseworthy Pretty Duke	—
2 1 3	3,712½	5·90	219·16	240	Pembroke Twylish	Withdrawn
2 0 18	5,405	4·05	218·86	273	Park View Reward 2nd	—
2 1 16	5,024	4·31	216·61	273	Oakbank Classical	—
1 3 3	3,804	5·65	215·00	273	Para Vale Prince 2nd	—
2 1 6	4,948½	4·32	213·75	273	Wangara Melba's Limelight	—
1 7 1	3,906	5·45	212·94	273	Scrub View Twylish Lad	—
2 3 10	5,703	3·70	211·26	273	Melba's Limelight of Wangara	—
1 11 17	4,959½	4·25	210·54	273	Oakbank Classical	—
1 8 8	4,352	4·84	210·51	273	Ninyeri Prince	—
1 9 13	4,133	5·08	209·79	273	Channel View Prince	—
1 9 5	3,496	5·98	209·15	273	Bellefaire Blonde's Signal	—
2 1 12	5,305½	3·86	205·00	273	East View Sultan	—
1 8 25	4,455	4·52	201·53	240	Cudlee Creek Masterman	†
2 1 19	4,260	4·69	199·97	150	Werribee Masterman	Withdrawn
1 10 11	3,220	6·13	197·49	210	Bellefaire Blonde's Aristocrat	Sold
1 8 12	3,452½	5·71	197·04	273	Pembroke Mischief	—
1 11 14	4,867½	4·03	196·35	240	Oakbank Classical	†
2 2 18	3,465	5·59	193·71	240	Pembroke Mischief	Withdrawn
1 7 29	3,171½	5·94	188·28	273	Wollongbar Romancer	—
2 0 14	4,294½	4·33	186·06	273	Gowrie Park Ida's Laird	—
1 8 19	3,909	4·66	182·32	273	Silver Lad of Eudunda	—
1 2 17	3,800	4·75	180·66	273	Para Vale Prince 2nd	—
1 11 3	3,150	5·69	179·20	210	Para Wirra Collegian	Withdrawn
1 8 9	4,770	3·75	178·76	273	Gowrie Park Scottish Standard	—
2 0 15	4,930½	3·62	178·60	273	Northfield Janet's Royal	—
2 1 12	4,779	3·70	176·82	273	East View Sultan	—
2 1 13	4,200	4·17	175·00	210	Gowrie Park Scottish Dandy	Dried off
1 7 26	3,765	4·63	174·35	210	Balaklava Rhodesian's Repulse	Owner ceased testing
2 3 18	3,037½	5·48	166·51	273	Mercedes Sweet Duke of Glen Iris	—
1 5 21	2,785	5·93	165·28	240	Pembroke Twylish	†
1 9 12	*3,030*	*5·42*	*164·28*	*210*	*Channel View Starlight*	*Dried off*
1 11 8	2,865	5·68	162·65	180	Edmonton Butter King	Withdrawn
2 1 16	2,957½	5·16	152·53	240	Twylish of Para Wirra	Withdrawn
2 3 13	2,745	5·52	151·61	180	Lakeland Golden Masterpiece	Sold
2 4 17	2,406½	6·10	146·86	273	Glenlea Hilda's Valour	—
1 3 0	2,587½	5·49	142·14	180	Hampden Olive's King	Dry
1 8 18	3,135	3·36	105·28	120	Anama Alcartra Rex	Sold
2 1 26	1,905	4·71	89·65	90	Glen Echo Grey Lad	Died
1 2 16	1,515	5·21	78·92	120	Dalebank Wizard	Withdrawn
BUTTERFAT STANDARD, 250LBS.						
2 6 20	8,514	5·76	487·66	273	Dalebank Noble Duke	—
2 9 3	6,665½	6·17	411·46	273	Werribee Masterman	—
2 8 28	6,572	6·19	406·59	273	Wooroora King's Hero	—
2 10 19	7,521½	5·11	384·52	273	Timbungalung Airboy	—
2 9 17	6,938½	5·51	382·54	273	Lakeland Golden Masterpiece	—
2 11 29	6,784½	5·46	370·34	273	Baxter of Banyule	—
2 11 26	6,681	5·52	368·73	273	Woodside Palatine Boy	—
2 11 7	6,017	5·77	347·37	273	Overlook Favourite Remus	—
2 10 21	7,979	4·25	339·02	273	Clarendon Eyre Eminents Happy Husband	—
2 10 7	5,136	6·43	330·07	273	Overlook Favourite Remus	—
2 10 12	5,928	5·57	330·05	273	Wollingurry Cavalier's Silver King	—
2 8 27	6,490	5·06	328·41	273	Dalebank Producer 3rd	—
2 9 29	5,825½	5·64	328·32	273	Overlook Favourite Remus	—
2 6 12	5,424	6·02	326·39	273	Beauty's King of Somerville	—
2 8 20	6,772½	4·75	321·75	273	Delma Butter King	—
2 11 15	5,211½	6·07	316·46	273	Morella Anemone's Chief 5th	—
2 8 13	5,312½	5·95	316·14	273	Tuela Syra	—
2 8 28	5,993½	5·23	313·18	273	Bellefaire Blonde's Aristovrat	—
2 9 27	7,916	3·91	309·91	273	Lake View Royal	—

PURE-BRED COWS COMPLETED

Herd Book No.	Name of Cow.	Owner and Address.	Breed.	Calved.
				SENIOR TWO-YEAR-OLDS—
Not allotted	Glen Belah Bertha	E. O. Hancock, Andrews	Ayrshire	7/8/34
41050	*Mira Chana Sheila*	H. B. Peters, Mt. Compass	Jersey	2/5/34
8283	Kiama Robin 4th	E. & A. Nicholls, Woodville	A.I.S.	11/8/34
41384	Ontario Nancy	T. B. Brooks, Clarendon	Jersey	29/4/34
Not allotted	Lake View Beauty 8th	J. M. Irwin, Mount Barker	A.I.S.	17/6/34
39737	Fernden Lady Combine	O. H. Woodward, Gilles Plains	Jersey	9/5/34
46522	Tuela Columbine	F. Coleman, Saddleworth	"	14/6/34
2980	Woodside Maisie	S. W. Burns, Woodside	Guernsey	27/7/34
42231	Timbungalung Dewdrop	Mrs. A. M. Carruthers, Narrung	Jersey	25/4/34
39233	Channel View Primrose	Mrs. A. M. Carruthers, Narrung	"	25/7/34
43583	Cumberland Molly	L. W. Frost, Saddleworth	"	27/5/34
45564	Ontario Violet	T. B. Brooks, Clarendon	"	20/8/34
26521	Kyby Heroine	Government Farm, Kybybolite	Ayrshire	11/9/34
43914	Gambier Alden's Una	A. P. Spehr, Mount Gambier	*Jersey*	18/8/34
Not allotted	Wybalenna Tot Again	Mrs. A. H. Spackman, Long Flat	A.I.S.	18/8/34
41120	Morella Viola 3rd	H. R. Walsh, Mount Barker	Jersey	23/7/34
40132	Gum Hill Queen	P. O. Schutz, Eudunda	"	25/6/34
40555	Kirami Dawn	R. J. Laing, Gumeracha	"	19/8/34
26525	Kyby Oread	Government Farm, Kybybolite	Ayrshire	28/10/34
44391	Inman Nola	G. V. Rogers, Inman Valley	Jersey	13/2/35
Not allotted	Kyby Maggie 5th	Government Farm, Kybybolite	Ayrshire	19/10/34
				JUNIOR THREE-YEAR-OLDS—
34530	Pella Pamela	C. E. Verco, Mount Compass	Jersey	15/7/34
34645	Hampden Blonde's Countess	J. A. J. Pfitzner, Hampden	"	1/6/34
41505	Para Wirra Violet	J. H. Dawkins, Gawler	"	21/5/34
38616	Woodside Golden Maid	O. H. Woodward, Gilles Plains	"	19/9/34
34483	Sweet Haven Noble Duchess	J. M. Bray, Langhorne's Creek	"	14/9/34
40284	Inman Lady Grey	G. V. Rogers, Inman Valley	"	21/7/34
34647	Hampden Just It	J. A. J. Pfitzner, Hampden	"	19/8/34
39790	Glandore Lismore	W. A. Mueller, Ambleside	"	8/9/34
46529	Tuela Lobelia	F. Coleman, Saddleworth	"	18/8/34
46524	Tuela Diplacus	F. Coleman, Saddleworth	"	23/8/34
34549	Torrens Mystic Best	H. B. Peters, Mount Compass	"	16/5/34
5332	Dunleith Viola	Dunleith Pastoral Co., Ashbourne	A.I.S.	4/8/34
35311	Austral Park Swirl	H. R. Walsh, Mount Barker	Jersey	18/8/34
41268	*Ninyeri Mayflower*	*E. L. Goode, Narrung*	"	*23/4/34*
46530	Tuela Maple	F. Coleman, Saddleworth	"	2/8/34
44802	Lakeland Winette	H. R. Walsh, Mount Barker	"	8/6/34
34583	Alexandra Queen Clementine	A. Kelly, Milang	"	29/4/34
41498	Para Vale Cherry Starbright	A. J. Marrett, Saddleworth	"	26/8/34
5330	Dunleith Primula	Dunleith Pastoral Co., Ashbourne	A.I.S.	16/8/34
34580	Beetaloo Molly	Mrs. E. M. Johns, South Plympton	Jersey	30/8/34
39484	Cumberland Dewdrop's Lass	L. W. Frost, Saddleworth	"	1/9/34
40288	Inman Sally	G. V. Rogers, Inman Valley	"	16/8/34
41555	Pembroke Duchess 3rd	Mrs. C. W. Ansell, Bolivar	"	23/8/34
38659	Alexandra Bonny Janet	A. Kelly, Milang	"	1/8/34
44806	Lallawa Chieftain's Diana	J. F. Dodd, Meningie	"	20/7/34
46532	Tuela Spartium	F. Coleman, Saddleworth	"	1/8/34
45685	Pembroke Lady Lotus	Mrs. C. W. Ansell, Bolivar	"	3/9/34
40131	Gum Hill Majesty	P. O. Schutz, Eudunda	"	9/9/34
40133	Gum Hill Rosette's Bell	P. O. Schutz, Eudunda	"	7/7/34
39483	Cumberland Damsel	L. W. Frost, Saddleworth	"	17/8/34
Not allotted	Kyby Ailsa	Govt. Farm Kybybolite	Ayrshire	27/8/34
"	Kyby Brilliant	Govt. Farm, Kybybolite	"	21/4/34
45684	Pembroke Gentle	Mrs. C. W. Ansell, Bolivar	Jersey	15/9/34
45683	Pembroke Duchess 4th	Mrs. C. W. Ansell, Bolivar	"	21/9/34
Not allotted	Kyby Roslin	Govt. Farm, Kybybolite	Ayrshire	14/8/34
42842	Balaklava Collegian's Rosemary	A. E. Middleton, Balaklava	Jersey	12/10/34
Not allotted	Long Flat Cinderella 3rd	Mrs. A. H. Spackman, Long Flat	A.I.S.	20/12/34
"	Kyby Justice	Govt. Farm, Kybybolite	Ayrshire	31/10/34
8243	Kiama Mayfair	E. A. Groth, Walker's Flat	A.I.S.	26/10/34
				SENIOR THREE-YEAR-OLDS.—
34663	Roseworthy Glimmer	Agricultural College, Roseworthy	Jersey	26/6/34
46510	Tuela Waratah 4th	F. Coleman, Saddleworth	"	23/8/34
34605	Pella Golden Lotus	W. A. Mueller, Ambleside	"	14/8/34
41117	Tuela Gaillardia	F. Coleman, Saddleworth	"	21/7/34
46531	Tuela Daisy	F. Coleman, Saddleworth	"	31/7/34
39492	Stonyfell Rosetta	J. W. Crompton, Victor Harbour	"	17/4/34
Not allotted	Roseworthy Rose	Agricultural College, Roseworthy	"	25/9/34

OFFICIAL TEST—*continued.*

Age at Calving.	Total Milk.	Average Test.	Total Butter-fat.	Days Tested.	Sire.	Remarks.
Y. M. D.	Lbs.	%	Lbs.			
BUTTERFAT STANDARD, 250LBS.—*continued.*						
2 10 25	7,051½	4·33	305·35	273	Gowrie Park Dairyman	—
2 6 20	4,902½	6·15	301·44	273	Timbungalung Larkspurs Masterlark	—
2 11 16	8,550½	3·41	291·42	273	Pembroke of Greyleigh	—
2 8 18	5,372½	5·37	288·31	273	Dalebank Viola's Duke	—
2 9 14	7,758½	3·68	285·59	273	Lake View Gayboy	—
2 11 3	5,128½	5·54	284·15	273	Fernden Twylish Combination	—
2 10 14	3,967	7·02	278·44	273	Hampden Winsome King	—
2 11 4	4,473	6·03	269·85	273	Wollongbar Brutus	—
2 11 23	5,460	4·72	257·46	273	Timbungalung Butter King	—
2 6 11	4,626	5·54	256·13	273	Channel View Prince	—
2 9 7	4,473	5·55	248·26	273	Silver Lad of Eudunda	—
2 10 12	4,411½	5·47	241·29	273	Dalebank Viola's Duke	—
2 11 28	5,820	4·14	241·23	240	Ida's Laird of Gowrie Park	Dried off
2 7 29	4,426½	5·40	238·98	273	Les Sentes Lord Alden	—
2 9 7	6,108	3·88	236·99	273	Wangara Sunflower's Limelight	—
2 11 18	4,510	5·03	226·68	273	Anemone's Chief of Morella	—
2 10 29	4,392	5·07	222·72	273	Pella Northwood Cavalier	—
2 9 18	2,630	5·84	153·55	180	Lakeland Golden Masterpiece	W thdrawn
2 11 16	3,555	4·26	151·49	210	Loyalty of Bridge View	Dried off
2 7 7	2,100	5·04	105·81	120	Wooroora King's Admiral	Owner ceased testing
2 11 4	2,415	4·38	105·68	150	Loyalty of Bridge View	Dried off
BUTTERFAT STANDARD, 270LBS						
3 0 9	9,030	5·31	479·63	273	Dalebank Noble Duke	—
3 3 11	8,130½	5·89	478·90	273	Bellefaire Blonde's Aristocrat	—
3 2 23	8,215½	5·35	439·33	273	Para Wirra Sunshine Twylish II.	—
3 3 18	7,745	5·35	414·22	273	Pioneer's Lad	—
3 1 26	6,851	6·03	412·86	273	Dalebank Mercedes Duke	—
3 1 0	9,082½	4·32	392·72	273	Melford's Butter Lad of Pella	—
3 3 15	6,092½	6·26	381·65	273	Bellefaire Blonde's Aristocrat	—
3 2 16	6,213	6·08	377·79	273	Morella Tulip's Neat Lad	—
3 1 1	6,031½	6·12	368·86	273	Hampden Winsome King	—
3 0 29	6,421½	5·57	357·46	273	Hampden Winsome King	—
3 5 11	7,069½	4·98	351·74	273	Dalebank Producer 3rd	—
3 5 19	9,306	3·77	351·08	273	Sultan of East View	—
3 5 11	6,142½	5·65	347·14	273	Trecarne Sheik	—
3 5 5	7,132½	4·72	336·34	273	Hampden Mayflower King	—
3 0 21	6,711	4·94	331·45	273	Hampden Winsome King	—
3 3 5	7,080	4·64	328·51	240	Duke of Dalebank	†
3 1 2	5,366	6·02	323·28	273	Hampden Queen's Repeater	—
3 0 16	6,508½	4·92	320·56	273	Para Wirra Cherry Pylon	—
3 4 7	9,052	3·52	318·78	273	Sultan of East View	—
3 5 20	6,005½	5·25	315·11	273	Myrtle Bank Baxter	—
3 3 24	5,730½	5·49	314·57	273	Silver Lad of Eudunda	—
3 2 9	6,511½	4·54	295·68	273	Melfords Butter Lad of Pella	—
3 5 22	4,893	5·97	291·98	273	Para Wirra Twylish	—
3 0 3	5,338½	5·44	290·54	273	Hampden Queen's Repeater	—
3 0 1	5,740½	5·03	288·68	273	Chieftain 2nd of Dalebank	—
3 0 12	5,314	5·38	285·67	273	Hampden Winsome King	—
3 1 0	5,163	5·49	283·29	273	Twylish of Para Wirra	—
3 2 26	5,389½	5·24	282·68	273	Hampden Carnation's Lad	—
3 0 13	5,658	4·91	277·75	273	Hampden Carnation's Lad	—
3 0 13	4,938½	5·54	273·83	273	Silver Lad of Eudunda	—
3 0 9	5,886	4·37	257·88	273	Loyalty of Bridge View	—
3 0 26	6,021	4·05	244·12	273	Gowrie Park Scottish Dandy	—
3 0 4	4,525	4·96	224·62	240	Twylish of Para Wirra	Withdrawn
3 0 25	3,490	5·32	185·67	240	Twylish of Para Wirra	Withdrawn
3 0 4	4,965	3·72	185·16	240	Gowrie Park Scottish Dandy	Dried off
3 0 12	3,450	4·86	167·79	120	Balaklava Skylee's Collegian	Owner ceased testing
3 0 26	4,500	3·66	164·80	120	Wangara Ruth's Limelight	Died
3 0 0	3,195	4·80	153·39	150	Kyby Roger	Dried off
3 0 20	2,685	3·93	105·59	60	Pembroke of Greyleigh	Owner ceased testing
BUTTERFAT STANDARD, 290LBS.						
3 9 5	7,101	6·59	468·13	273	Mercedes Sweet Duke of Glen Iris	—
3 11 29	9,186	4·93	452·97	273	Brinkworth Chris	—
3 7 25	6,795½	6·07	412·57	273	Dalebank Noble Duke	—
3 10 26	6,298	6·48	407·99	273	Hampden Winsome King	—
3 8 22	6,853	5·95	407·92	273	Brinkworth Chris	—
3 7 28	6,780	6·01	407·68	273	Mack of Glenford	—
3 7 16	7,341	5·54	403·79	273	Roseworthy Templar	—

PURE-BRED COWS COMPLETED

Herd Book No.	Name of Cow.	Owner and Address.	Breed.	Calved.
			SENIOR THREE-YEAR-OLDS—	
34480	Crofton Sunny Morn	H. & A. Bohme, Balhannah	Jersey	14/9/34
Not allotted	Anama Dominoe Belle	W. Hawker, Clare	Friesian	21/7/34
34639	Delma Duchess	E. W. Pfitzner, Eudunda	Jersey	30/8/34
Not allotted	Para Vale Molly	A. J. Marrett, Saddleworth	"	18/9/34
34582	*Alexandra Janet's Olive*	*A. Kelly, Milang*	"	29/7/34
Not allotted	Anama Transvaal Starlight	W. Hawker, Clare	Friesian	26/5/34
34490	Channel View Miss Grey	Mrs. A. M. Carruthers, Narrung	Jersey	8/8/34
34590	Glen Ewin Coutance	Mrs. A. Bowman, Meningie	"	19/5/34
31027	Stonyfell Helen 7th	J. W. Crompton, Victor Harbour	"	10/4/34
Not allotted	Roseworthy Sciential 4th	Agricultural College, Roseworthy	"	24/8/34
34635	Delma Bonnie Countess	E. W. Pfitzner, Eudunda	"	23/8/34
Not allotted	Hazelbrook Elaine	J. N. Reid, Oakbank	Ayrshire	14/8/34
34528	Pella Magnet	W. A. Mueller, Ambleside	Jersey	25/9/34
34664	Roseworthy Lady 4th	Agricultural College, Roseworthy	"	23/6/34
31093	Brinkworth Rae	C. C. T. Ottens, Brinkworth	"	30/3/34
5421	Northfield Royal's Princess 2nd	Insp.-General Hospitals, Northfield	A.I.S.	14/9/34
5426	Long Flat Mermaid	Mrs. A. H. Spackman, Long Flat	"	8/5/34
35305	Austral Park Sparklett	H. R. Walsh, Mount Barker	Jersey	30/7/34
34642	Delma Twilight	E. W. Pfitzner, Eudunda	"	8/10/34
41554	Pembroke Dawn	Mrs. C. W. Ansell, Bolivar	"	11/8/34
Not allotted	Kyby Wynette	Government Farm, Kybybolite	Ayrshire	2/8/34
"	Balaklava Griselda Viola	A. E. M ddleton, Balaklava	Friesian	1/10/34
26522	Kyby Kathleen	Government Farm, Kybybolite	Ayrshire	25/9/34
41553	Pembroke Bonny Lotus	Mrs. C. W. Ansell, Bolivar	Jersey	13/8/34
5418	Northfield Royal's Flirt 2nd	Insp.-General Hospitals, Northfield	A.I.S.	9/8/34
			JUNIOR FOUR-YEAR-OLDS—	
34633	Lakeland Capture	H. B. Peters, Mount Compass	Jersey	12/9/34
38614	Woodside Dreaming Satisfaction	A. B. Sieber, Eudunda	"	5/8/34
31016	Crofton Mavourneen	H. & A. Bohme, Balhannah	"	3/7/34
31136	Wooroora Lassie	A. B. Sieber, Eudunda	"	10/8/34
34667	Roseworthy Princess 41st	Agricultural College, Roseworthy	"	31/3/34
34517	Para Wirra Sunbeam 2nd	J. H. Dawkins, Gawler	"	2/6/34
Not allotted	Tuela Lavender	F. Coleman, Saddleworth	"	23/9/34
34584	Wooroora Lady Pride	A. Kelly, Milang	"	14/7/34
Not allotted	Tuela Dewdrop	F. Coleman, Saddleworth	"	5/9/34
41504	Para Wirra Iris Queen 2nd	J. H. Dawkins, Gawler	"	16/8/34
34508	Tuela Stephanotis	F. Coleman, Saddleworth	"	30/8/34
5329	Dunleith Millie	Dunleith Pastoral Co., Ashbourne	A.I.S.	3/8/34
31019	Sweet Haven Mercedes Bloom 2nd	J. M. Bray, Langhorne's Creek	Jersey	19/9/34
41266	Ninyeri Annette	E. L. Goode, Narrung	"	20/9/34
34651	Cudlee Creek Columbine's Pearl	G. D. Oster, Balaklava	"	8/6/34
40103	Greenoaks Sweetbread	W. A. Mueller, Ambleside	"	11/5/34
23555	Carracoorte Viola 19th	Insp.-General Hospitals, Northfield	Ayrshire	15/4/34
41556	Pembroke Madge	Mrs. C. W. Ansell, Bolivar	Jersey	27/8/34
Not allotted	Sunnybrae Melvina	E. O. Hancock, Andrews	Ayrshire	27/7/34
39477	Cudlee Creek Shy Girl	Mrs. W. A. Pool, Cudlee Creek	Jersey	19/8/34
5380	Burradale Pearl 5th	W. Nitschke & Son, Littlehampton	A.I.S.	23/8/34
5379	Burradale Miss Kelso 7th	W. Nitschke & Son, Littlehampden	"	18/5/34
2799	Glenlea Wenonah 2nd	E. T. Vinall, Brighton	Guernsey	6/7/34
5413	Liberton Charm	Insp.-General Hospitals, Northfield	A.I.S.	18/4/34
5373	Kiama Rose 2nd	E. and A. Nicholls, Woodville	"	1/4/34
Not allotted	Kyby Revel	Government Farm, Kybybolite	Ayrshire	15/8/34
"	Kyby Annie	Government Farm, Kybybolite	"	12/5/34
44808	Lallawa Chieftain's Mystery	J. F. Dodd, Meningie	Jersey	10/11/34
			SENIOR FOUR-YEAR-OLDS—	
34327	Melvin Viola 2nd	C. E. Verco, Mt. Compass	Jersey	10/8/34
31074	Glen Ewin Morn's May 2nd	Jas. McEwin, Houghton	"	1/8/34
31051	Cumberland Pride	L. W. Frost, Saddleworth	"	15/7/34
31052	Cumberland Silver Lady	L. W. Frost, Saddleworth	"	12/7/34
34278	Ear Park Rose	A. P. Spehr, Mt. Gambier	"	21/8/34
34672	Roseworthy Sciential 3rd	Agricultural College, Roseworthy	"	2/9/34
31104	Hampden Lady Olive	J. A. J. Pfitzner, Hampden	"	25/8/34
31082	Para Vale Queen	Mrs. D. G. Steven, Kooringa	"	23/4/34
31081	Para Vale Lucy	A. J. Marrett, Saddleworth	"	5/9/34

465..
39492
Not allotted | Lo..

OFFICIAL TEST—*continued.*

Age at Calving.	Total Milk.	Average Test.	Total Butter-fat.	Days Tested.	Sire.	Remarks.
Y. M. D.	Lbs.	%	Lbs.			
BUTTERFAT STANDARD, 290LBS.—*continued.*						
3 6 29	7,508½	5·26	394·77	273	Butter King of Pella	—
3 10 25	11,053½	3·46	383·25	273	Totara Pontiac Dainty Boy	—
3 11 10	7,546½	5·08	383·23	273	Beauty's King of Somerville	—
3 8 0	8,147½	4·64	377·75	273	Para Wirra Cherry Pylon	—
3 11 19	7,083	5·15	364·62	273	Hampden Olive's King	—
3 7 17	9,040½	4·03	364·27	273	Longbeach Dutch Type 2nd	—
3 9 15	6,990½	5·19	363·08	273	Makarini of Dalebank	—
3 9 28	6,749	5·30	357·65	273	Brucevale Lord Fancy Starbright	—
3 8 28	6,181½	5·77	356·43	273	Mack of Glenford	—
3 6 17	6,463½	5·25	339·43	273	Mercedes Sweet Duke of Glen Iris	—
3 6 16	5,843½	5·62	328·39	273	Beauty's King of Somerville	—
3 11 20	8,245½	3·96	326·28	273	Beleura Federal	—
3 6 11	6,342	5·13	325·12	273	Werribee Combination	—
3 11 15	6,355½	5·11	324·97	273	Mercedes Sweet Duke of Glen Iris	—
3 11 5	5,491½	5·76	316·15	273	Hampden Olive's King	—
3 9 28	7,594	3·94	299·54	273	Royal's Success of Arrawatta	—
3 7 23	7,470	3·96	295·44	240	Ruth's Limelight of Wangara	†
3 6 10	5,235	5·49	287·60	240	Trecarne Sheik	†
3 6 9	4,410	5·13	225·97	180	Beauty's King of Somerville	Withdrawn
3 11 16	4,140	5·44	225·06	240	Twylish of Para Wirra	Withdrawn
3 11 26	5,355	4·06	217·33	240	Gowrie Park Scottish Dandy	Dried off
3 8 28	6,615	3·19	210·58	150	Glenowie Beets Griselda	Owner ceased testing
3 6 4	5,325	3·91	208·08	240	Gowrie Park Scottish Dandy	Dried off
3 11 27	3,877½	5·27	204·27	240	Twylish of Para Wirra	Withdrawn
3 6 6	4,795	3·55	170·24	240	Janet's Royal of Northfield	†
BUTTERFAT STANDARD, 310LBS.						
4 3 19	9,030½	5·61	507·00	273	Demetreus of Tuela	—
4 4 2	8,874	5·33	473·42	273	Dreaming Bob	—
4 2 22	8,345½	5·50	459·12	273	Butter King of Pella	—
4 5 28	7,896	5·58	440·30	273	Wollingurry Cavalier's Silver King	—
4 4 30	7,414½	5·49	407·26	273	Mercedes Sweet Duke of Glen Iris	—
4 1 13	9,339	4·30	401·80	273	Banyule Pylon	—
4 1 29	7,590½	5·25	398·37	273	Hampden Winsome King	—
4 0 22	6,037½	6·59	397·77	273	Wollingurry Cavalier's Silver King	—
4 1 13	6,735½	5·85	393·74	273	Brinkworth Chris	—
4 0 18	6,898½	5·38	371·29	273	Para Wirra Maglona's Twylish 2nd	—
4 0 23	7,097½	5·19	368·63	273	Hampden Winsome King	—
4 3 28	9,540	3·84	366·63	273	Merger of Melross	—
4 0 8	7,325	4·87	357·04	273	Dalebank Mercedes Duke	—
4 3 24	7,218	4·81	347·26	273	Morella Mercedes Sweet Duke	—
4 2 3	6,522	5·28	344·48	273	Producer 3rd of Dalebank	—
4 3 22	6,666½	5·16	344·09	273	Dalebank Commander 2nd	—
4 5 12	7,364	4·41	324·66	273	Bluebell's Pride of Glencourt	—
4 1 3	5,694½	5·58	317·73	273	Twylish of Para Wirra	—
4 2 10	8,220	3·83	314·84	240	Warook Federal	†
4 0 27	5,795½	5·38	311·78	273	Wompini Master Leon	—
4 5 19	8,103	3·76	304·96	273	Lovely's Earl of Glenthorn	—
4 1 15	6,538½	4·59	300·25	273	Lovely's Earl of Glenthorn	—
4 4 29	5,751	5·17	297·40	273	Glenlea Hilda's Valour 2nd	—
4 5 2	6,449	4·39	282·80	273	Limit of East View	—
4 1 12	6,627	4·09	270·77	273	Robin Hood of Kiama	—
4 4 4	6,540	3·75	245·22	240	Gowrie Park Scottish Dandy	Dried off
4 2 3	5,040	4·67	235·44	240	Gowrie Park Scottish Dandy	Dried off
4 4 0	3,570	4·85	173·28	180	Dalebank Chieftain 2nd	Withdrawn
BUTTERFAT STANDARD, 330LBS.						
4 10 29	11,815½	5·35	632·12	273	Retford Julian	—
4 11 27	8,754	5·04	441·05	273	Brucevale Lord Fancy Starbright	—
4 7 28	8,085	5·31	429·67	273	Silver Lad of Eudunda	—
4 8 8	7,966	5·23	417·02	273	Silver Lad of Eudunda	—
4 11 15	7,069½	5·82	411·53	273	Alert of Farringdon	—
4 6 17	7,375½	5·40	398·40	273	Mercedes Sweet Duke of Glen Iris	—
4 10 14	7,970½	4·97	395·82	273	Mayflower's Lad of Hampden	—
4 8 13	6,786½	5·77	391·65	273	Werribee Combination	—
4 7 25	7,846	4·69	367·70	273	Dalebank Milklad 12th	—

PURE-BRED COWS COMPLETEI

Herd Book No.	Name of Cow.	Owner and Address.	Breed.	Calved.
			SENIOR FOUR-YEAR-OLDS—	
29020	Glenalvie Sweet Dinah	A. P. Spehr, Mount Gambier	Jersey	13/9/34
31132	Gum Hill May	P. O. Schutz, Eudunda	"	23/5/34
31108	Hampden Melody	G. D. Oster, Balaklava	"	26/9/34
5378	Liberton Flash 2nd	E. & A. Nicholls, Woodville	A.I.S.	22/8/34
25195	Kyby Ornate	Government Farm, Kybybolite	Ayrshire	4/9/34
Not allotted	Talmont Stella	E. O. Hancock, Andrews	"	5/7/34
31155	Scrub View Cherry	A. B. A. Weckert, Brinkworth	Jersey	19/6/34
34675	Roseworthy Twilight	Agricultural College, Roseworthy	"	6/4/34
2346	Northfield Limelight's Blossom	Insp.-General Hospitals, Northfield	A.I.S.	8/9/34
Not allotted	Fernleigh Pansy	Calf Club, Sutton Town	Friesian	15/8/34
40287	Inman Rose Marie	G. V. Rogers, Inman Valley	Jersey	16/11/34
34473	Pembroke Patience	Mrs. C. W. Ansell, Bolivar	"	20/8/34
34674	Roseworthy Sunset	Agricultural College, Roseworthy	"	17/7/34
5414	Liberton Flirt 3rd	Insp-General Hospitals, Northfield	A.I.S.	15/9/34
5382	Liberton Pretty Lady 2nd	W. Nitschke & Sons, Littlehampton	"	31/8/34
34604	Balaklava Collegian's Rosette	A. E. Middleton, Balaklava	Jersey	18/9/34
2533	Glenlea Fi Fi 3rd	E. T. Vinall, Brighton	Guernsey	2/5/34
31005	Pembroke Fashion	Mrs. C. W. Ansell, Bolivar	Jersey	5/7/34
31099	Hampden Carissa	J. A. J. Pfitzner, Hampden	"	25/1/35
Not allotted	Melara Princess	Mrs. D. G. Steven, Kooringa	"	7/10/34
44804	Lallawa Carnation 4th	J. F. Dodd, Meningie	"	12/4/35
			MATURE COWS—	
3657	Murray Glen Sylvia Topsy	C. J. Morris, Monteith	Friesian	12/8/34
34326	Melvin Duchess	C. E. Verco, Mount Compass	Jersey	12/9/34
2500	Murray Glen Echo Topsy	C. J. Morris, Monteith	Friesian	9/9/34
2502	Murray Glen Griselda Patch	C. J. Morris, Monteith	—	19/7/34
31050	Cumberland Duchess	L. W. Frost, Saddleworth	Jersey	17/7/34
34509	Tuela Swainsonia	F. Coleman, Saddleworth	"	13/9/34
10883	Belle 6th of Tabbagong	J. M. Irwin, Mount Barker	A.I.S.	31/7/34
3481	Glenowie Sylvia Patch	H. Mountstephen, Monteith	Friesian	19/7/34
Not allotted	Roads End Corcyra	W. Hawker, Clare	"	24/8/34
3160	Murray Glen Princess Royal	C. J. Morris, Monteith	"	15/9/34
23591	Woodside Morn	J. McEwin, Houghton	Jersey	22/8/34
28065	Tuela Daffodil 2nd	F. Coleman, Saddleworth	"	25/7/34
28138	Dalebank Sweetbread	W. A. Mueller, Ambleside	"	20/8/34
23622	Roseworthy Princess 26th	Agricultural College, Roseworthy	"	27/4/34
31030	Para Wirra Eileen 3rd	J. H Dawkins, Gawler	"	24/8/34
25028	St. Helier's Mystery	J. F. Dodd, Meningie	"	8/5/34
31033	Para Wirra Millie's Goldstream 2nd	J. H. Dawkins, Gawler	"	5/5/34
28057	Crofton Bonnie Kate	H. & A. Bohme, Balhannah	"	18/8/34
23700	El Rimal Surprise	E. O. Hancock, Andrews	Ayrshire	31/7/34
18373	Mayflower Jellicoe 2nd of Illawarra	Mrs. A. H. Spackman, Long Flat	A.I.S.	10/9/34
34654	Wompini Leonie 7th	O. H. Woodward, Gilles Plains	Jersey	6/9/34
20847	Roseworthy Flora	Agricultural College, Roseworthy	"	14/8/34
1199	Brush Grove Albertina 2nd	P. J. A. Braendler, Ambleside	A.I.S.	29/8/34
23617	Roseworthy Dawn	Agricultural College, Roseworthy	Jersey	7/5/34
3311	Anama Segis Bloom	W. Hawker, Clare	Friesian	15/8/34
25051	Roseworthy Erudite 2nd	Agricultural College, Roseworthy	Jersey	13/7/34
20760	Doreen of Pella	A. B. Sieber, Eudunda	"	28/7/34
Not allotted	Murray Glen Netherland Princess	C. J. Morris, Monteith	Friesian	11/4/34
23632	Pella Lady Lotus	A. Kelly, Milang	Jersey	15/7/34
28052	Pembroke Duchess 2nd	Mrs. C. W. Ansell, Bolivar	"	7/9/34
23605	Hampden Rhonda	C. C. T. Ottens, Brinkworth	"	4/6/34
24853	Hampden Maybee	J. A. J. Pfitzner, Hampden	"	13/4/34
Not allotted	Cotswold Colas	R. J. Laing, Gumeracha	"	25/9/34
28058	Crofton Sunflower	H & A. Bohme, Balhannah	"	13/7/34
3479	Glenowie Princess Patch	H. Mountstephen, Monteith	Friesian	15/7/34
2499	Murray Glen Echo Sylvia	C. J. Morris, Monteith	"	17/5/34
20740	Sweetbriar of Tuela	F. Coleman, Saddleworth	Jersey	10/10/34
24972	Cumberland Princess	L. W. Frost, Saddleworth	"	16/8/34
Not allotted	Glenowie Echo Segis	A. E. Middleton, Balaklava	Friesian	29/5/34
20825	Judith of Talunga	C. C. T. Ottens, Brinkworth	Jersey	12/7/34
34276	Willis Vale Twinkle	A. P. Spehr, Mount Gambier	"	12/8/34
3214	Waughope Redwing 4th	Dunleith Pastoral Co., Ashbourne	A.I.S.	11/9/34
24865	Scrub View Daffodil	A. B. A. Weckert, Brinkworth	Jersey	30/5/34
Not allotted	Kyby Gladys	Government Farm Kybybolite	Ayrshire	22/8/34
23628	Roseworthy Roseal	Agricultural College Roseworthy	Jersey	19/4/34
23567	Willow Farm Millie 31st	A. J. Marrett Saddleworth	"	13/7/34
Not allotted	Waughope Slasher 4th	Dunleith Pastoral Co. Ashbourne	A.I.S.	12/4/34
"	Liberton Betsy	J. M. Irwin Mt. Barker	"	24/5/34

OFFICIAL TEST—*continued.*

Age at Calving.			Total Milk.	Average Test.	Total Butter-fat.	Days Tested.	Sire.	Remarks.
Y.	M.	D.	Lbs.	%	Lbs.			
BUTTERFAT STANDARD, 330LBS.—*continued.*								
4	8	16	6,540½	5·41	354·25	273	Werribee Fancy Masterpiece	—
4	8	14	6,386½	5·47	349·09	273	Hampden Carnation's Lad	—
4	6	3	6,701½	5·03	336·87	273	Hampden Olive's King	—
4	10	29	10,332	3·19	329·79	273	Mariner of Greyleigh	—
4	11	6	7,485	4·28	320·06	240	Loyalty of Bridge View	Dried off
4	8	4	6,645	4·72	313·53	273	Beleura Captain	—
4	11	2	5,329½	5·85	311·54	273	Holly's King of Hampden	—
4	8	27	5,349½	5·71	305·60	273	Courtier of Dalebank	—
4	11	12	6,991½	4·26	297·60	273	Melba's Limelight of Wangara	—
4	*9*	*8*	*7,992*	*3·53*	*282 15*	*273*	*Fernleigh Dutch Hero*	—
4	6	4	4,530	6·12	277·40	210	Makarini 2nd of Dalebank	Owner ceased testing
4	8	9	5,679	4·84	274·86	273	Twylish of Para Wirra	—
4	6	29	4,917	5·32	261·47	273	Mercedes Sweet Duke of Glen Iris ...	—
4	10	22	6,486½	3·89	252·41	273	Mariner of Greyleigh	—
4	8	17	6,435	3·65	234·85	240	Belmont of Darbalara	Withdrawn
4	11	5	4,222½	4·77	201·51	150	Balaklava's Skylee's Collegian	Owner ceased testing
4	7	6	3,101	6·45	199·94	273	Glenlea Hilda's Valour 2nd	—
4	9	29	4,357½	4·49	195·60	273	Twylish of Para Wirra	—
4	6	24	2,985	5·59	166·89	90	Hampden Olive's King	Sold
4	*8*	*27*	*3,810*	*4·27*	*162·75*	*180*	*Melara Royal Silvermine*	*Withdrawn*
4	6	22	990	5·67	56·10	30	Dalebank Chieftain 2nd	Withdrawn
BUTTERFAT STANDARD, 350LBS.								
6	2	29	23,458½	3·27	766·87	273	River Glen Lord Echo Griselda	—
6	*10*	*29*	*13,134*	*5·51*	*723·21*	*273*	*Retford Julian*	—
8	2	5	17,064	3·44	587·65	273	River Glen Lord Echo Griselda	—
8	4	2	14,440½	4·01	579·34	273	River Glen Lord Echo Griselda	—
5	4	28	11,586	4·80	555·85	273	Silver Lad of Eudunda	—
5	—	1	9,457	5·77	545·64	273	Baron of Dalebank	—
8	8	30	13,683	3·97	542·98	273	Violet's Emperor of Hill View	—
7	8	28	13,999½	3·76	525·73	273	River Glen Sir Pietje Griselda	—
5	3	28	15,838½	3·28	519·61	273	Rosevale King Sylvia Posch	—
7	11	17	13,164	3·85	507·05	273	River Glen Lord Echo Griselda	—
8	11	1	10,768	4·69	504·97	273	Montrose Sultan	—
6	11	28	7,382½	6·73	496·93	273	Maid's Success of Linden	—
6	10	4	9,009	5·37	484·13	273	Mercedes Sweet Duke of Glen Iris ...	—
7	*5*	*8*	*8,028*	*5·82*	*467·59*	*273*	*Courtier of Dalebank*	—
5	5	9	8,109	5·63	456·23	273	Para Wirra Chieftain	—
7	5	24	7,845	5·77	452·58	240	Nada's Chief of Linden	Withdrawn
5	2	20	9,036	4·97	449·30	273	Para Wirra Chieftain	—
5	2	19	7,606	5·88	447·52	273	Butter King of Pella	—
5	0	13	10,851½	4·12	446·94	273	Gowrie Park Dairyman	—
9	4	20	10,938½	4·08	445·78	273	Fussy's Jellicoe of Hill View	—
5	1	26	7,900	5·45	430·88	273	Werribee Masterman	—
8	10	4	7,239	5·93	429·29	273	King Solomon of Dalebank	—
6	3	21	11,428½	3·73	426·49	273	Ardee of The Hill	—
7	4	0	8,206½	5·19	425·88	273	Lad of Linden	—
5	9	17	13,263	3·21	425·64	273	Inavale Lady's Pride	—
6	3	21	6,972	6·09	424·45	273	King Solomon of Dalebank	—
8	1	4	8,482½	4·91	416·75	273	Governor Grey of Pella	—
5	4	28	12,345	3·36	415·39	273	Longbeach Netherland King 2nd	—
7	4	2	6,676½	6·19	413·29	273	Werribee Starbright's Fancy.........	—
6	3	27	7,900	5·16	408·00	273	Twylish of Para Wirra	—
8	*0*	*0*	*7,965*	*5·11*	*406·69*	*273*	*Carnation's Lad of Dalebank*	—
7	*10*	*3*	*7,218½*	*5·58*	*402·84*	*273*	*Carnation's Lad of Dalebank*	—
6	1	24	7,972½	5·00	398·60	273	Duke of Dalebank..................	—
5	4	19	8,238	4·82	396·97	273	Butter King of Pella	—
7	2	5	12,313½	3·22	396·96	273	Murray Glen Echo Griselda..........	—
8	5	28	11,631	3·39	393·99	273	River Glen Lord Echo Griselda	—
9	6	9	8,025	4·89	392·61	240	Maid's Success of Linden	Sold
6	5	7	7,458	5·23	390·26	273	King Chris of Penrhyn	—
6	7	1	12,522½	3·10	389·28	240	Glenowie Beets Griselda	†
9	8	10	8,101½	4·77	386·66	273	Molar Chief of Banyule	—
5	0	5	9,450	4·05	382·36	273	Camellia's King of Willis Vale	—
5	6	23	10,776	3·55	382·24	273	Garnet of Brush Grove	—
6	*9*	*1*	*6,965*	*5·45*	*379·76*	*273*	*Holly's King of Hampden*	—
5	1	7	8,292½	4·54	376·27	273	Loyalty of Bridge View	—
7	4	27	5,934	6·32	375·32	273	Courtier of Dalebank	—
8	0	0	6,898	5·40	372·57	273	Molly 5th's Audrey Twylish of Banyule	—
5	1	14	9,980	3·72	371·14	273	Garnet of Brush Grove	—
7	8	21	9,545	3·87	369·50	240	Limit of East View	Withdrawn

PURE-BRED COWS COMPLETED

MATURE COWS—

Herd Book No.	Name of Cow.	Owner and Address.	Breed.	Calved.
31122	Roseworthy Fay	Agricultural College Roseworthy	Jersey	3/8/34
16387	Kyby Ina	Government Farm, Kybybolite	Ayrshire	22/7/34
24084	Kyby Maggie 4th	Government Farm, Kybybolite	"	5/4/34
24823	Penrhyn Princess Hermia	H. R. Walsh, Mount Barker	Jersey	25/8/34
28051	Pembroke Daisy	Mrs. C. W. Ansell, Bolivar	"	26/8/34
31083	Havec Tulip	Mrs. C. E. Mayger, Kapunda	"	26/5 34
20774	Mistletoe 2nd of Beetaloo	Mrs. E. M. Johns, South Plympton	"	16 8/34
24857	Wooroora Bonnnie Pearl	A. B. Sieber, Eudunda	"	9/4/34
3221	Wingeewah Sadie 2nd	P. J. A. Braendler, Ambleside	A.I.S.	24/8/34
Not allorted	Glenowie Netherland Pauline	H. Mountstephen, Monteith	Friesian	0/5/34
34662	Penrhyn Lady Marge 13th	G. V. Rogers, Inman Valley	Jersey	25/6/34
31026	Stoneyfell Connie 2nd	J. W. Crompton, Victor Harbour	"	2/9/34
2461	Glenowie Pauline Griselda	H. Mountstephen, Monteith	Friesian	8/5/34
23621	Roseworthy Princess 25th	Agricultural College, Roseworthy	Jersey	8/9/34
20849	Roseworthy Princess 21st	Agricultural College, Roseworthy	"	27/8/34
Not allotted	Penrhyn Lady Hermia 27th	G. V. Rogers, Inman Valley	"	21/7/34
24991	Brinkworth Ruby	C. C. T. Ottens, Brinkworth	"	5/6/34
17884	Primrose of Toora	Insp.-General Hospitals, Northfield	A.I.S.	28/7/34
28090	St. Helier's Barbara	J. F. Dodd, Meningie	Jersey	2/7/34
1682	Tabbagong Beauty 10th	J. M. Irwin, Mount Barker	A.I.S.	22/9/34
18424	Kyby Maggie 3rd	Government Farm, Kybybolite	Ayrshire	25/9/34
33597	Willis Vale Briar Rose	A. P. Spehr, Mount Gambier	Jersey	28/6/34
28166	Morella Lilly	Mrs. D. G. Steven, Kooringa	"	16/6/34
21831	Kyby Barbara 2nd	Government Farm, Kybybolite	Ayrshire	16/7/34
Not allotted	Hazelbrook Trinket	J. N. Reid, Oakbank	"	21/8/34
18348	Cinderella 16th of Greyleigh	Mrs. A. H. Spackman, Long Flat	A.I.S.	19/9/34
34547	Torrens Cleopatra	H. B. Peters, Mount Compass	Jersey	27/4/34
13105	Millie 10th of Melross	Dunleith Pastoral Co., Ashbourne	A.I.S.	30/8/34
23562	Stonyfell Beatrice	J. W. Crompton, Victor Harbour	Jersey	31/3/34
18741	Oakbank Hopeful	J. N. Reid, Oakbank	Ayrshire	5/8/34
28164	Morella Belle 4th	H. R. Walsh, Mount Barker	Jersey	14/7/34
24843	Penrhyn Lady McEwin 23rd	Mrs. A.M. Carruthers, Narrung	"	17/8/34
31125	Roseworthy Princess 36th	Agricultural College, Roseworthy	"	28/4/34
34601	Palpara Connie	Mrs. C. E. Mayger, Kapunda	"	10/9/34
21843	Kyby Winsome	Government Farm, Kybybolite	Ayrshire	10/9/34
31148	Morella Damsel 4th	Mrs. D. G. Steven, Kooringa	Jersey	15/5/34
28062	Ontario Kate's Twylish	T. B. Brooks, Clarendon	"	19/5/34
Not allotted	Columbine's Lady 7th of Glen Ewin	H. R. Walsh, Mount Barker	"	26/7/34
20752	Millie 28th of Willow Farm	A. B. A. Weckert, Brinkworth	"	10/8/34
21836	Kyby Madge 2nd	Government Farm, Kybybolite	Ayrshire	21/8/34
13107	Melba 5th of Melross	Dunleith Pastoral Co., Ashbourne	A.I.S.	30/9/34
14310	Carnation 2nd of Oakhill	Mrs. C. E. Mayger, Kapunda	Jersey	19/6/34
28060	Ontario Firefly	T. B. Brooks, Clarendon	"	11/7/34
24000	Hazelbrook Eva	J. N. Reid, Oakbank	Ayrshire	14/8/34
20221	Gowrie Park Lolette	J. N. Reid, Oakbank	"	26/8/34
31101	Hampden Jessamine	E. W. Pfitzner, Eudunda	Jersey	14/10/34
Not allotted	Hazelbrook Dulcie	J. N. Reid, Oakbank	Ayrshire	8/12/34
24838	Gum Hill Rosette	P. O. Schutz, Eudunda	Jersey	14/7/34
Not allotted	Hazelbrook Elva	J. N. Reid, Oakbank	Ayrshire	27/8/34
26847	Winslade Gem	E. O. Hancock, Andrews	"	28/10/34
28147	Hampden Janet	A. Kelly, Milang	Jersey	8/8/34
8465	Waratah of Eastview	Insp.-General Hospitals, Northfield	A.I.S.	23/7/34
24085	Kyby Roma	Government Farm, Kybybolite	Ayrshire	12/10/34
14763	Tot of Ben Lomond	Insp.-General Hospitals, Northfield	A.I.S.	14/9/34
10594	Gum Hill Mayflower	P. O. Schutz, Eudunda	Jersey	10/6/34
28068	Freezia 2nd of Tuela	Mrs. D. G. Steven, Kooringa	"	20/12/34
15184	Oakbank Alleyne	Government Farm, Kybybolite	Ayrshire	12/11/34
23612	Hill Farm Lady	D. Fitzgerald, Edwardstown	Jersey	21/11/34

† NOTE.—Tenth tests were required for the cows marked thus :—†, but could not be obtained

CORRECTION.—Mr. A. Kelly's cow " Wooroora Dorette " was published in the list for the half-year ended
figures are

Herd Book No.	Name of Cow.	Owner and Address.	Breed.	Calved.
28157	Wooroora Dorette	A. Kelly, Milang	Jersey	27/2/34

OFFICIAL TEST—*continued.*

Age at Calving.	Total Milk.	Average Test.	Total Butter-fat.	Days Tested.	Sire.	Remarks.
Y. M. D.	Lbs.	%	Lbs.			
BUTTERFAT STANDARD, 330LBS.—*continued.*						
5 8 25	6,828	5·40	368·50	273	King Solomon of Dalebank	—
7 6 21	8,094	4·52	366·16	273	Loyalty of Bridge View	—
5 1 18	9,657	3·78	365·59	273	Loyalty of Bridge View	—
7 8 11	7,186½	5·07	364·08	273	Bramble's Lord of Linden	—
5 11 25	5,464½	6·64	363·05	273	Twylish of Para Wirra	—
5 1 12	7,043½	5·12	360·97	273	Hampden Carnation's Lad	—
8 11 20	7,350	4·91	360·91	273	Fuchsia Boy of Linden	—
5 10 19	7,834½	4·58	358·91	273	Melfords Butter Lad of Pella	—
5 0 4	10,144½	3·51	356·57	273	Daphne's Defiance of Hill View	—
5 4 0	10,582½	3·33	352·29	273	Longbeach Netherland King 2nd	—
6 2 7	6,843	5·13	351·31	273	Socrates of Rockness	—
5 1 11	6,712½	5·22	350·68	240	Baxter of Banyule	†
8 2 4	8,535	4·11	350·46	240	River Glen Sir Pietje Griselda	Dried off
7 10 12	7,335	4·75	348·36	273	King Solomon of Dalebank	—
8 9 3	6,435	5·37	345·30	240	King Solomon of Dalebank	†
6 6 16	7,057½	4·84	341·70	273	Socrates of Rockness	—
6 0 18	6,858	4·98	341·27	273	Beauty's King of Somerville	—
6 5 25	8,609½	3·95	340·23	273	Iris 5th's Superb of Toora	—
7 9 6	6,751½	5·03	339·97	273	Nada's Chief of Linden	—
6 9 15	8,206½	4·13	339·27	273	Daisy's Gift of Hill View	—
6 9 27	9,015½	3·76	338·72	273	Loyalty of Bridge View	—
5 9 28	6,381	5·18	330·51	273	Camellia's King of Willis Vale	—
6 3 14	6,395	5·33	341·11	240	Springmead General	†
6 4 19	8,613	3·82	329·05	273	Ida's Laird of Gowrie Park	—
5 3 28	7,608	4·29	326·35	273	Oakbank Chiming Bell	—
6 9 23	9,621	3·37	324·01	273	Alma's Jellicoe of Hillcrest	—
6 1 0	6,693	4·84	323·66	273	Dalebank Producer 3rd	—
6 7 16	8,796½	3·65	321·35	273	Dainty's Triumph of Melross	—
6 11 20	5,637	5·58	314·32	273	Boroni of Rockness	—
7 7 25	7,050	4·43	312·55	240	Aerial of Oakbank	Dried off
6 0 13	6,403½	4·82	308·85	273	Mercedes Sweet Duke of Glen Iris	—
7 7 20	5,707½	5·39	307·47	273	Bramble's Lord of Linden	—
5 5 23	5,427	5·55	301·17	273	Roseworthy Twylish	—
7 2 16	6,006½	4·98	299·34	273	Trojan of Dalebank	—
6 5 3	8,037	3·69	296·69	273	Loyalty of Bridge View	—
5 2 11	5,985	4·86	291·00	240	Morella Anemone's Chief 2nd	Dried off
5 9 11	5,918½	4·89	289·46	273	Cherry's Twylish of Para Wirra	—
8 2 6	4,287½	6·74	288·89	240	Trixie's Lad of Glen Ewin	†
9 11 8	6,147	4·67	286·97	273	Molly 5th's Audrey Twylish of Banyule	—
6 1 26	7,010	4·07	285·44	240	Loyalty of Bridge View	Dried off
6 5 19	8,025	3·48	279·64	240	Merger of Melross	Withdrawn
11 11 4	4,942½	5·62	277·93	273	Grey Sprite of Linden	—
6 0 4	5,305	4·91	260·53	210	Mercedes Sweet Duke of Glen Iris	Sold
5 10 14	6,720	3·85	258·58	240	Hazelbrook Cheerio	Sold
7 0 28	7,251	3·52	255·08	273	Loyal's Scot of Gowrie Park	—
5 3 29	4,575	5·46	249·57	210	Maid's Success of Linden	Withdrawn
5 7 15	5,970	4·13	246·62	180	El Rimal Count Rival	Withdrawn
8 10 23	5,335	4·58	244·37	210	Excamillo of Pella	Withdrawn
5 9 15	5,475	4·22	231·14	210	Oakbank Spotlight	Sold
7 1 22	6,172½	3·74	230·89	180	Chudleigh of Brook Hill	Withdrawn
5 11 23	4,455	4·96	220·88	150	Beauty's King of Somerville	Dried off
10 7 14	6,078½	3·56	216·35	273	Limit of East View	—
5 1 10	4,260	4·66	198·43	210	Ida's Laird of Gowrie Park	Dried off
10 7 13	5,075	3·71	188·19	240	Hayliss's Joffre of Wangara	†
13 1 8	3,125	5·50	171·82	210	Crusoe of Gum Hill	Withdrawn
6 4 4	2,640	4·80	126·77	150	Tuela Eric	Dried off
10 11 2	2,895	4·02	116·45	120	Bright's Jock of Oakbank	Dried off
7 10 4	970	4·79	46·42	90	Prince Silvermine of Pella	Sold

therefore the cows concerned have been credited with only 240 days production.

31st December, 1934, as a mature cow, whereas she was actually a senior four-year old. Her production hereunder.

Age at Calving.	Total Milk.	Average Test.	Total Butter-fat.	Days Tested.	Sire.	Remarks.
Y. M. D.	Lbs.	%	Lbs.			
4 9 4	6 156½	5·99	368·57	273	Wollingurry Cavalier's Silver King	—

NARRUNG HERD TESTING ASSOCIATION.

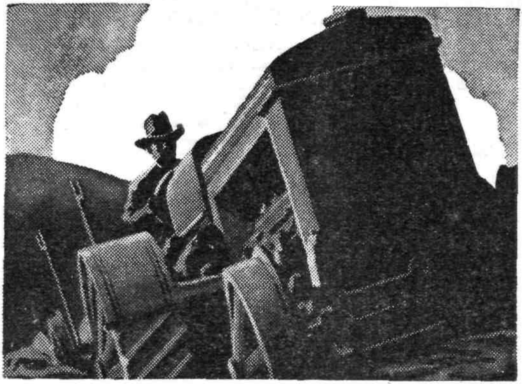
RESULTS OF BUTTERFAT TESTS FOR JULY, 1935.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.			Butterfat.			Average Test.
			Per Herd during July.	Per Cow during July.	Per Cow October to July.	Per Herd during July.	Per Cow during July.	Per Cow October to July.	
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	%
5/C ..	31·58	30·48	25,460½	806·22	5,027·09	1,365·40	43·24	263·25	5·36
5/D ..	33·26	25·77	17,354	523·53	4,400·89	909·06	27·41	236·22	5·33
5/E ..	34·29	26·45	18,237½	531·85	4,684·30	940·29	27·42	242·68	5·16
5/R ..	69·26	57·06	43,530½	628·51	4,239·70	1,948·45	28·13	190·02	4·48
5/EE	14·77	4·29	3,476½	235·37	4,041·36	171·94	11·64	206·49	4·95
5/Z	29·26	28·68	25,654	876·76	7,320·87	1,396·87	47·74	376·70	5·45
5/WW	20	18·35	14,291	714·55	4,554·85	667·90	33·40	214·55	4·67
5/XX	19·32	16·35	10,036½	519·48	4,220·51	487·38	25·23	220·00	4·86
5/YY	11·87	9·87	6,365½	536·26	4,020·92	341·70	28·79	204·30	5·37
5/AAA	18·39	14·97	11,157½	606·71	4,506·66	512·68	27·88	222·01	4·60
5/BBB	17	7·68	4,385	257·94	3,105·36	221·17	13·01	156·10	5·04
5/DDD	28	17·87	16,059	573·53	7,466·31	672·70	24·03	308·87	4·19
5/EEE	25	23·58	16,388	655·52	6,224·42	751·52	30·06	280·16	4·59
5/FFF	9	1·55	1,128	125·33	3,041·78	56·52	6·28	140·75	5·01
5/GGG	9	7·35	2,880½	320·06	4,307·05	134·46	14·94	202·51	4·67
5/HHH	18·32	12·90	7,573½	413·39	5,501·04	318·90	17·41	222·57	4·21
5/III	17·26	14	6,158	356·77	1,655·12	358·19	20·75	97·19	5·82
5/JJJ	26	24·48	18,198	699·92	2,854·76	1,016·92	39·11	149·55	5·59
5/KKK	19·19	18·77	8,374½	436·40	1,923·19	393·10	20·48	88·03	4·69
5/AA	21	18·35	9,930½	472·88	1,640·16	460·41	21·92	75·08	4·64
Means	23·59	18·94	13,331·98	565·19	4,915·79	656·28	27·82	237·94	4·92

THE HILLS HERD TESTING ASSOCIATION.

RESULTS OF BUTTERFAT TESTS FOR JULY, 1935.

Herd No.	Average No. of Cows in Herd.	Average No. of Cows in Milk.	Milk.		Butterfat.		Average Test.
			Per Herd during July.	Per Co during July.	Per Herd during July.	Per Cow during July.	
			Lbs.	Lbs.	Lbs.	Lbs.	%
7/H	9	8·23	4,783½	531·50	252·55	28·06	5·28
7/P	27·84	21	14,469	519·72	724·59	26·03	5·01
7/TT	17	13·71	10,755	632·65	468·78	27·58	4·36
7/BBB	80·42	63·03	40,251½	500·51	1,810·51	22·51	4·50
7/DDD	11·71	10·10	8,704	743·29	405·49	34·63	4·66
7/EEE	12·90	12·06	8,068	625·42	398·80	30·91	4·94
7/GGG	13	9·61	5,208	400·61	245·81	18·91	4·72
7/HHH	12	4·81	2,659½	221·62	96·74	8·06	3·64
7 III..................	17·48	8·06	6,459½	369·53	229·22	13·11	3·55
7/KKK	24·61	17·87	10,207½	414·77	516·74	21·00	5·06
7/MMM	12	10·35	5,521½	460·12	312·70	26·06	5·66
7/NNN	16·55	15·26	11,559	698·43	513·02	31·00	4·44
7/OOO	21	16·10	9,632½	458·69	425·77	20·27	4·42
7/PPP	19	18	9,734	512·32	505·04	26·58	5·19
7/QQQ	19·29	14	11,390½	590·48	540·49	28·02	4·75
7/RRR	18·94	12·10	6,412	338·54	271·54	14·34	4·23
7/SSS	10·23	9·10	6,427	628·21	284·00	27·76	4·42
7/TTT	8	7	4,665½	583·18	200·23	25·03	4·29
Means	19·50	15·02	9,828·19	504·05	455·67	23·37	4·64



This BETTER tractor fuel is BRITISH

As Britain is Australia's best customer it is fair enough to suggest that Australian primary producers *should use a British-Australian* tractor fuel. And by using "C.O.R" Power Kerosene you'll work more acres per gallon and gain smoother, trouble-free running.

Available in convenient 24-gallon drums.

"C.O.R"

NEW PROCESS

POWER KEROSENE

PK12/A

The Commonwealth Oil Refineries Limited. (Commonwealth Government & Anglo-Persian Oil Co. Ltd.)

DEPARTMENT OF AGRICULTURE.

SINGLE TEST EGG-LAYING COMPETITION, 1935-36.

Conducted at Parafield Poultry Station.

LEADING SCORES TO WEEK ENDED 25th AUGUST, 1935.—
FIRST GRADE EGGS ONLY.

SECTION 1.—WET MASH.

Class 1.—White Leghorns.

	Eggs Laid.	Bird Nos.
Singles—		
E. McKee	97	29
E. McKee	97	27
H. C. Stacy	97	36
F. J. Buck	97	219
G. Joyce	97	290
Trios—		
E. McKee	269	28–30
E. McKee	246	25–27
W. H. A. Hodgson	239	298–300
Teams—		
E. McKee	515	25–30
W. Sickert	443	169–174
C. R. Wharton	435	127–132

Class No. 2.—Any other Light Breed.

Singles—		
A. Heaysman (Cuckoo Leghorn)	87	323
Langmaid and Bettison (Black Minorca)	71	321

Class No. 3.—Black Orpingtons.

Singles—		
A. G. Dawes	86	327
K. Pennack	85	337
K. Pennack	79	340
Trios—		
H. J. Mills	182	331–333
K. Pennack	175	337–339
K. Pennack	169	340–342
Teams—		
K. Pennack	344	337–342
H. J. Mills	300	331–336
A. G. Dawes	285	325–330

Class No. 4.—Any other Heavy Breed.

Singles—		
H. J. Mills (Rhode Island Red)	109	364
V. F. Gameau (Rhode Island Red)	85	381
V. F. Gameau (Rhode Island Red)	84	380
Trios—		
K. Pennack (Barnevelder)	212	388–390
V. F. Gameau (Rhode Island Red)	190	379–381
H. J. Mills (Rhode Island Reds (2 birds only competing)	183	364–366
Teams—		
K. Pennack (Barnevelder)	349	385–390
V. F. Gameau (Rhode Island Reds)	330	379–384
A. G. Dawes (Rhode Island Reds)	271	367–372

SECTION 2.—DRY MASH.

Class No. 5.—White Leghorns.

Singles—		
G. R. Cowell	75	391
A. J. Monkhouse	66	402
G. R. Cowell	64	396
Trios—		
A. J. Monkhouse	155	400–402
A. J. Monkhouse	152	397–399
Teams—		
A. J. Monkhouse	307	397–402
G. R. Cowell	244	403–408

Class No. 7.—Black Orpingtons.

Singles—		
W. R. Christie	63	409
Class No. 8.—Any other Heavy Breed.		
W. R. Christie	58	414

SECTION 3.—WET MASH.

Singles—		
Olive Pitman, Gilles Plains (Black Orpington)	90	439
Lyol Stone, Morphett Vale (Black Orpington)	88	443
Eric Pratt, Abattoirs (White Leghorn) ..	88	434
Malcolm Booth, Bridgewater (Black Orpington)	87	445
Herbert Oliver, McLaren Vale, Black Orpington)	86	442

PARAFIELD POULTRY STATION.

NOW BOOKING ORDERS FOR Summer, 1936.

EGGS FOR HATCHING AND DAY OLD CHICKENS

WHITE LEGHORNS.

EGGS.—7s. 6d. per Setting of 15 Eggs. Incubator Lots, 30/- per 100.
DAY OLD CHICKENS.—15s. per dozen; £3/10/- in lots of 100.

BLACK ORPINGTONS.

EGGS.—10/- per Setting of 15 Eggs. Incubator Lots, £2 per 100.
DAY OLD CHICKENS.—17/6 per dozen; £4 per 100.

BLACK MINORCAS.

EGGS.—7s. 6d. per Setting of 15 Eggs. Incubator Lots, 30/- per 100.
DAY OLD CHICKENS.—15s. per dozen; £3/10/- in lots of 100.

Free on Rail, Salisbury.

DELIVERY.—CHICKS—January to March.
EGGS—January to February.

Intending breeders should realise the importance of establishing their flocks with only the very best of stock, also pay particular care to the size of the egg. The future of the poultry industry in South Australia is almost entirely dependent on the export trade; the size of the egg for export is of the greatest importance. The breeding stock at Parafield is carefully selected and every egg set or sold is of a minimum weight of 2ozs., and a large percentage considerably over.

All Eggs and Chickens sold from Parafield Poultry Station are guaranteed to be produced at Parafield.

EARLY BOOKING IS ADVISABLE.

Further particulars can be obtained from the Manager, Parafield Poultry Station, Salisbury, or Poultry Expert, Department of Agriculture, Flinders Street, Adelaide.

C. F. ANDERSON, Poultry Expert.

OFFICIAL SINGLE TEST EGG-LAYING COMPETITION, 1935-36.

CONDUCTED AT PARAFIELD POULTRY STATION.

ONLY FIRST GRADE EGGS RECORDED.

SECTION 1.—WET MASH.

Class No. 1.—White Leghorns.

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 25th Aug., 1935.	
B. Cooke, Kanmantoo.	1	60	
	2	49	
	3	58	167
	4	66	
	5	79	
	6	83	228
			395
	7	—	
	8	—	
	9	—	—
	10	—	
	11	—	
	12	—	—
			—
A. H. Matthews, Bridgewater	13	75	
	14	—	
	15	91	166
	16	83	
	17	67	
	18	49	199
			365
H. F. Muirson, Yundi.	19	5	
	20	46	
	21	38	89
	22	49	
	23	78	
	24	58	185
			274
E. McKee, 5, Rose Street, Carrondown.	25	58	
	26	91	
	27	97	246
	28	94	
	29	97	
	30	78	269
			515
H. C. Stacy, Meadows.	31	38	
	32	74	
	33	94	206
	34	40	
	35	69	
	36	97	206
			412
T. Cleaver, Bridgewater.	37	16	
	38	35	
	39	55	106
	40	75	
	41	29	
	42	48	152
			258
C. Sandstrom, Yundi.	43	57	
	44	—	
	45	53	110
	46	37	
	47	40	
	48	85	162
			272
A. J. Monkhouse, Woodside.	49	49	
	50	88	
	51	68	205
	52	86	
	53	35	
	54	56	177
			382
J. F. Smith, Meadows.	55	53	
	56	70	
	57	7	130
	58	31	
	59	2	
	60	81	114
			244
A. Young, Bridgewater.	61	78	
	62	63	
	63	60	201
	64	29	
	65	79	
	66	57	165
			366
R. W. McAlister, Yundi.	67	47	
	68	53	
	69	74	174
	70	33	
	71	26	
	72	55	114
			288
T. Duhring, Mallala.	73	84	
	74	74	
	75	38	196
	76	42	
	77	63	
	78	68	173
			369
R. J. Underdown, Meadows.	79	39	
	80	40	
	81	82	161
	82	51	
	83	58	
	84	75	184
			345
S. Hill, Bridgewater.	85	38	
	86	77	
	87	70	185
	88	72	
	89	81	
	90	60	213
			398
W. R. Hedger, Yundi.	91	30	
	92	42	
	93	45	117
	94	50	
	95	24	
	96	47	121
			238

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 25th Aug., 1935.	
	97	29	
	98	43	
Langmaid & Bettison, Salisbury.	99	30	102
	100	69	
	101	29	
	102	—	98
			200
	103	89	
	104	64	
E. Portlock, Meadows.	105	67	220
	106	54	
	107	43	
	108	76	173
			393
	109	87	
	110	11	
Murray Powell, Jupiter Creek.	111	68	166
	112	44	
	113	94	
	114	35	174
			340
	115	73	
	116	48	
G. W. Bignell, Meadows.	117	42	163
	118	46	
	119	72	
	120	74	192
			355
	121	61	
	122	22	
W. M. Field, Yundi.	123	44	127
	124	20	
	125	55	
	126	76	151
			278
	127	61	
	128	71	
C. R. Wharton, Meadows.	129	79	211
	130	81	
	131	68	
	132	75	224
			435
	133	54	
	134	81	
H. H. Hefford, Murray Bridge.	135	59	194
	136	29	
	137	84	
	138	53	166
			360
	139	52	
	140	2	
F. W. Gage, Meadows.	141	dead	54
	142	68	
	143	36	
	144	41	145
			199
	145	72	
	146	43	
W. H. L. Norman, Echunga.	147	—	115
	148	85	
	149	53	
	150	29	167
			282
	151	84	
	152	22	
B. R. Whittington, Yundi.	153	44	148
	154	70	
	155	68	
	156	36	174
			322
	157	71	
	158	80	
B. C. Sanders, Meadows.	159	80	231
	160	68	
	161	9	
	162	dead	77
			308
	163	16	
	164	51	
H. H. Gallagher, Pooraka.	165	58	125
	166	36	
	167	21	
	168	65	122
			247
	169	87	
	170	49	
W. Sickert, Meadows.	171	80	116
	172	57	
	173	82	
	174	88	227
			443
	175	16	
	176	—	
W. Restall, Echunga.	177	36	52
	178	66	
	179	53	
	180	74	193
			245
	181	75	
	182	51	
A. G. Dawes, 230, Portrush Road, Glenunga.	183	44	170
	184	22	
	185	51	
	186	78	151
			321
	187	68	
	188	29	
G. W. Sykes, Yundi.	189	24	121
	190	38	
	191	37	
	192	71	146
			267
	193	53	
	194	86	
R. Bartley, Meadows.	195	70	209
	196	45	
	197	58	
	198	73	176
			385
	199	44	
	200	46	
A. & H. Gurr, Mindaroo Poultry Farm, Bradbury.	201	55	145
	202	67	
	203	32	
	204	42	141
			286

Egg-laying Competition—Continued.

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 25th Aug., 1935.	
K. Pennack, Pooraka. (Barnevelders.)	385	52	
	386	49	
	387	36	137
	388	69	
	389	61	
	390	82	212
			349
A. G. Dawes, 230, Portrush Road, Glenunga. (Rhode Island Reds.)	458	3	
	459	43	
	460	74	120
	461	15	
	462	48	
	463	52	115
			235
Total Class No. 4			1,626

SECTION 2.—DRY MASH.

Class No. 5.—White Leghorns.

Competitor.	Bird No.	First Grade Eggs.	
G. R. Cowell, Balhannah.	391	75	
	392	26	
	393	7	108
	394	26	
	395	21	
	396	64	111
			219
A. J. Monkhouse, Woodside.	397	36	
	398	60	
	399	56	152
	400	38	
	401	51	
	402	66	155
			307
G. R. Cowell, Balhannah.	403	58	
	404	48	
	405	32	138
	406	44	
	407	34	
	408	28	106
			244
Total Class No. 5			770

Class No. 7.—Black Orpingtons.

Competitor.	Bird No.	First Grade Eggs.
W. R. Christie, Upper Mitcham.	409	63
	410	26
	411	46
		135
Total Class No. 7		135

Class No. 8.—Any Other Heavy Breed.

Competitor.	Bird No.	First Grade Eggs.
W. R. Christie, Upper Mitcham. (Rhode Island Reds.)	412	53
	413	28
	414	58
		139
Total Class No. 8		139

SECTION 3.—WET MASH.

Home Project Utility Section.—Any Breed.

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 25th Aug., 1935.
Peter Western, Ascot Park School. (White Leghorn.)	415	85
Peter Western, Ascot Park School. (White Leghorn.)	416	81
William Sando, Echunga School. (White Leghorn.)	417	60
Douglas Marshall, Yundi School. (White Leghorn.)	418	64
Norman Page, Murray Bridge School. (White Leghorn.)	419	59
Kelvyn & Brian Nicholls, Finniss School. (White Leghorn.)	420	56
Dean Colwell, Grange School (White Leghorn.)	421	48
Warren Hannaford, Paracombe School. (White Leghorn.)	422	82
W. Horne, Woodville School. (White Leghorn.)	423	76
Owen Robinson, Ascot Park School. (White Leghorn.)	424	81
June Chapman, Woodchester School. (White Leghorn.)	425	39
Rosa Hunt, Morphett Vale School. (White Leghorn.)	426	56
Jack O'Sullivan, Morphett Vale School. (White Leghorn.)	427	72
Peter Taylor, Morphett Vale School. (White Leghorn.)	428	35
James Taylor, Morphett Vale School. (White Leghorn.)	429	58
William Gregory, Victor Harbour School. (White Leghorn.)	430	40
Ian Bruce, McLaren Flat School. (White Leghorn.)	431	31
Clifford Burford, Smithfield School. (White Leghorn.)	432	21
Tom Callaghan, Smithfield School. (White Leghorn.)	433	2
Eric Pratt, Abattoirs School. (White Leghorn.)	434	88
Stanley Pratt, Abattoirs School. (White Leghorn.)	435	72
Alan Yelland, Cunliffe School. (Minorca.)	436	49
Gordon Gallasch, Gilles Plains School. (White Leghorn.)	437	59

EGG-LAYING COMPETITION—*Continued.*

Competitor.	Bird No.	First Grade Eggs. Progressive Totals to 25th Aug., 1935.
Clarence King, Tarlee School. (White Leghorn.)	438	21
Olive Pitman, Gilles Plains School. (Black Orpington.)	439	90
Donald Heading, Sturt School. (Black Orpington.)	440	77
Clive Steer, Sturt School. (Black Orpington.)	441	62
Herbert Oliver, McLaren Vale School. (Black Orpington.)	442	86
Lyol Stone, Morphett Vale School. (Black Orpington.)	443	88
Ray Candy, Noarlunga School. (Black Orpington.)	444	40
Malcolm Booth, Bridgewater School. (Black Orpington.)	445	87
Murray Heneker and Frank Short, Hamley Bridge School. (Black Orpington.)	446	61
Peter Boucaut, Seaton Park School. (Rhode Island Red.)	447	21
Peter Preece, Gilles Plains School. (Rhode Island Red.)	448	52
Cliff Crosser Wellington Road School. (White Leghorn.)	449	84
John Keldoulis, Orroroo School. (Black Orpington.)	450	63
Bruce Dooland, Thebarton School. (Black Orpington.)	451	31
Alan Yelland, Cunliffe School. (Rhode Island Red.)	464	15
Total		2,192

Diabolo Separator Coy (S.A.) Ltd.

117-119 CURRIE STREET,

ADELAIDE.

AGRICULTURE IN THE TEMPERATE AND SUB-TROPICAL CLIMATES OF THE SOUTH.

[A Report by the Deputy Director of Agriculture (W. J. Spafford) to His Excellency Sir Winston Dugan, K.C.M.G., C.B., D.S.O., Governor in and over the State of South Australia and its Dependencies in the Commonwealth of Australia. Mr. Spafford took a brief tour of portions of the principal agricultural countries in the same climatic zones as the settled portions of Australia, in fulfilment of the appointment as Honorary Commissioner, conferred upon him by His Excellency, to inquire into and report upon the Production and Preparation for Marketing of Agricultural Products, including Crops and Livestock in South America, South Africa, and New Zealand.]*

INTRODUCTION.

In the belief that South Australia will climb from the existing depression on its agricultural production the Government desired to know whether the rural primary producers of the country are keeping abreast of the times or whether others competing in the principal markets of the world are outstripping them in production and marketing methods. To ascertain this, and to bring back anything likely to be of help to local producers, a very brief tour was undertaken in the principal agricultural countries located in the same climatic zones as the settled portions of Australia, viz., those portions of the countries in the Southern Hemisphere where the climatic conditions are either Temperate or Sub-tropical.

To fulfil the objects in view the tour was designed to embrace portions of New Zealand, Chile, Argentina, Uruguay, Southern Brazil, and South Africa, and occupied from mid-November, 1934, to mid-June, 1935, and the following notes are a record of the agricultural conditions, industries, and practices noticed and investigated in the various countries visited.

NEW ZEALAND.

On arrival in New Zealand the Government immediately made arrangements for the local Department of Agriculture to further the investigation of the agriculture of the Dominion, and the officers of the department were unremitting in their attention, and their kindness enabled a considerable amount to be seen in the limited time available.

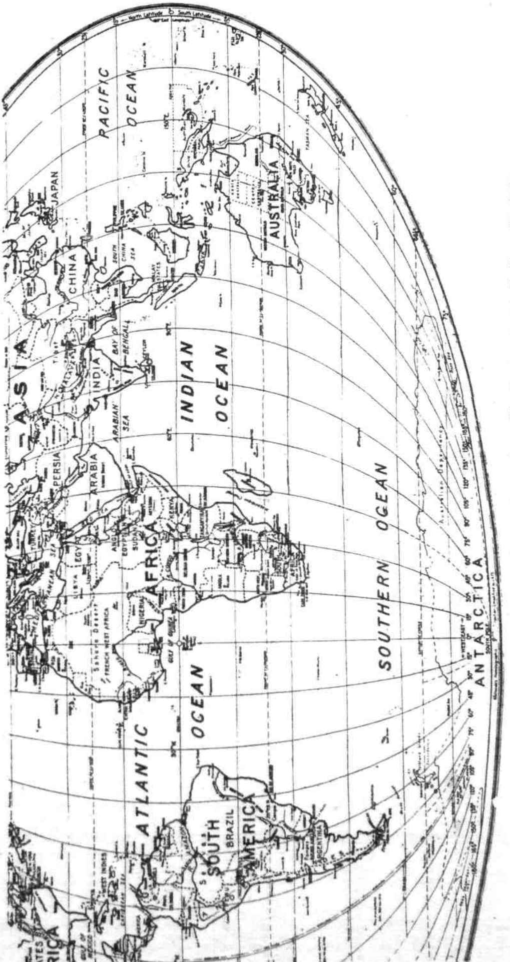
NEW ZEALAND—A GARDEN.

This wonderful little country of New Zealand is world-famed for its agricultural production, the quantities being extremely high for the size of the country, and the relatively small population. There appears to be no crop suitable for temperate climate which cannot be grown well in some part or other of the islands, and the profusion of the growth of most crops, the evergreen nature of the pastures, and the luxuriance of the trees, justify the description so often applied that "New Zealand is one of the gardens of the world."

The profusion of growth so usual in the country is by no means wholly due to [illegible] advantageous natural conditions which exist, but is in great part aided by the [illegible] of the agriculturists and the efficient Agricultural Department which directs [illegible] activities. The various primary rural products now produced in large [illegible] are of very high quality, and the portion exported overseas is of the best, [illegible]ared to suit the tastes of the consumers, and is adequately advertised [illegible] markets.

Peter
Ascot
(White
Peter Wester,
Ascot Park
(White Legho.

* in the company of Col. C. P. Butler ("Yattalunga," of the *Advertiser* and the *Chronicle*.)



Australia's Immediate Competitors are located in the Same Climatic Zone in the Southern Hemisphere.

AGRICULTURAL PRODUCTION AND EXPORTS OF NEW ZEALAND.

The agricultural products of New Zealand, of which there are large exportable surpluses, consist almost solely of livestock productions, although the export of apples is appreciable and the sales overseas for small agricultural seeds are expanding rapidly.

In the following table are to be seen the numbers of farm livestock maintained and the slaughterings for home consumption and export:—

FARM LIVESTOCK IN NEW ZEALAND IN 1933-34

Livestock.	Present in 1934.	Slaughterings, 1933-34.	
		Home Consumption	Export.
	No.	Carcasses.	Carcasses.
Sheep	28,649,038	1,652,171	10,729,385
Cattle	4,301,128	329,171	159,233
Pigs	660,393	421,307	378,760
Horses	273,906	—	—
*Fowls	3,308,384	—	—
*Ducks	352,030	—	—
*Turkeys	76,852	—	—
*Geese	43,879	—	—

* 1926 census.

Besides the export of meat New Zealand has developed a strong trade in dairy products and other articles derived from livestock, the principal ones of which are set out in the next table:—

PRINCIPAL LIVESTOCK PRODUCTS EXPORTED FROM NEW ZEALAND.

Article.	1932-33.	1933-34.
	Tons.	Tons.
Lamb (frozen)	136,685	127,445
Mutton (frozen)	54,085	45,331
*Beef (frozen)	33,719	46,692
Pork (frozen)	10,014	19,851
Preserved meat	1,647	1,946
Butter	121,512	141,294
Cheese	95,958	99,612
Casein	2,266	2,737
Dried milk	8,887	6,713
Preserved milk	992	961
Wool	143,348	144,330
Sheepskins (woolled)	1,242	1,610
Sheepskins (without wool)	5,701	4,175
Hides	474	682

*To 30th June, 1934, chilled beef to the extent of 16,112 quarters had been shipped to Great Britain.

Although not very considerable yet, New Zealand is in the export field with some crops, and several of these can be increased as markets are found for the surplus. The quantities of the principal items exported last year are set out below:—

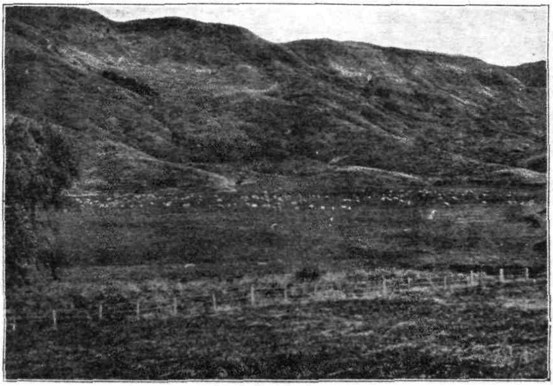
AGRICULTURAL PRODUCTION IN NEW ZEALAND.—PRINCIPAL CROPS IN 1933-34.

Crop.	Area.	Season 1933-34.	
		Production.	Export.
Pete Asc (Wh	Acres.	Tons.	Tons.
Peter Wes ...gricultural seeds ..	92,158	9,237	3,877
Ascot Pa ...tatoes	25,028	131,045	3,256
(White Leg ...at	286,271	242,036	8,042
.. ..	30,362	18,704	816
.. ..	78,343	57,903	8
.. ..	—	42,411	26,014
.. ..	—	—	137

AGRICULTURAL CONDITIONS OF NEW ZEALAND.

The natural conditions of New Zealand are very favourable from an agricultural point of view, and largely because most of the soils are very fertile, although they vary in type a good deal, and nearly all of the country is blessed with a good-enough climate to encourage the growth of plants. In a general sort of way New Zealand is a long narrow strip of land, broken though it be into several islands, stuck out in the Southern Ocean, and as it is a hilly country, it gets the benefit of its position so far south in the rainfall it receives, and because of its narrowness most of it experiences the equableness of climate which usually results from proximity to the sea.

The total area of New Zealand, including all islands and islets, is 104,015 square miles, but the bulk of this area consists of South Island with 58,092 square miles and North Island with 44,281 square miles.



[Photo. from *New Zealand Farmer*.

The Natural Conditions Promoting Growth are so good in most parts of New Zealand that Pasture Plants grow strongly on the Hills as well as on the Plains.

The rainfall of most of the country is relatively high and well distributed, but there are a few small localities where the average annual rainfall is quite low, due to high hills intercepting the rain coming with the prevailing winds. The lowest recorded average annual rainfall is about 13 inches at Galloway, and the highest over 200 inches in parts of the mountains in the south. Much of the country receives from 30 to 50 inches of average annual rainfall, but just as important, particularly where pastures are concerned, is the fact that in most places this rain is so evenly distributed that about equal amounts are received every month in the year. Another favourable feature of the New Zealand climate is that, despite the high rainfall received over most districts, it is neither a cloudy nor a foggy country, but receives plenty of sunshine, and in this direction also favours the development and health of livestock.

Although some of the mountains are snow-capped and frequent falls occur in the ranges, it is very seldom that snow reaches the lower lands, and the climate is so equable that it is quite unnecessary to house farm livestock at any time of the year.

PASTURES OF NEW ZEALAND.

Although many of its agricultural activities are highly developed, there are none more so than the pastures, and all parts of New Zealand, with the exception of the poor "pumice" soils and stony high lands, grow good pastures as soon as the natural tree and bush growth is removed. Where topdressing is applied the growth is usually improved to a very great extent, but there are some localities where manurial dressings have not proved to be economic because the natural fertility of the soils is too high. Even the "pumice" soils, which four or five years ago were looked upon as being too poor to be worth clearing, can be brought very quickly to the stage of carrying two cows in milk to 3 acres by seeding down and the liberal use of phosphatic fertilisers.

The pastures, which are probably the best in the world, are so good throughout most of the year that it is unusual to see extensive reserves of hay and ensilage anywhere except in the dairying districts, and even there most farmers appear to depend upon the pastures without storing much fodder for future use. In the

A Pure Stand of White Clover in New Zealand. The Pastures of New Zealand are probably the best in the world, and consist almost wholly of mixtures of grasses and clovers. If preference can be given to any particular plant it would be allotted to White Clover as the most important pasture plant for New Zealand conditions.

better districts, and for that matter practically everywhere away from the hills, the pastures are to all intents and purposes evergreen, and there is little need to think of storing fodder.

The livestock-carrying capacity of the better parts of New Zealand is so very ·gh that it is difficult to believe the figures supplied, but they are confirmed by Pete ·any farmers and departmental officers as well that visitors cannot help but Asc (Wh —vinced, despite preconceived ideas of possibilities in this direction. A few grict. in this connection, amply supported by outsiders, will give some idea of Peter Wes Ascot Pa tatoesrful are the pastures of widely separated districts in New Zealand:—

(White Legt .. ıkowhai, near Hastings, on Hawke's Bay Plains, a farmer on 369 .. in 1933, 2,300 crossbred ewes for the whole year, lambed them down, .. old 115 per cent. of lambs, then fattened 6,000 sheep, on which he

made 3s. 6d. per head, and during the year fattened 100 bullocks as well. Besides all this grazing, 97 acres were left for seed, and from the area 26bush. of double-dressed Rye Grass seed and 120lbs. double-dressed White Clover seed were harvested per acre. The one-year-old stand of Rye Grass to be harvested this season (1934-35) is expected to yield 45bush. per acre of "maiden" seed. The only cropping done by this farmer is the growing of a few acres of Mangels each year, from which yields of 80 to 100 tons per acre are secured. After the crop of Mangels the land is seeded with a mixture of 2½bush. Rye Grass seed and 1½lbs. White Clover per acre. The only fertiliser used consists of 5cwts. "Bone and Blood" per acre with the crop of Mangels, but such a small area is sown to this crop each year that very little fertiliser is given to the land, and then only

A 30-year-old Pasture of White Clover and Perennial Rye Grass in Zealand shut up for seed. When intelligently managed some of the pastures remain good for many years, and then produce the most valuable seed.

occasionally. The seeding mixture used by this farmer is not the one commonly seeded in districts other than Hawke's Bay, for in most places it is more like 1bush. of Grass seed and 3lbs. White Clover per acre.

(*b*) On a property of 1,700 acres, also located on Hawke's Bay Plains, near Hastings, 150 acres were harvested for seed in 1933, and throughout the year the farm carried 8,000 crossbred ewes (which were lambed down, and the lambs sold to a freezing works), about 3,000 "dry" sheep and 300 bullocks. After the lambs were sold some thousands of sheep from the hilly country owned by this farmer were fattened and sold for slaughtering.

(c) On a 100-acre farm some few miles to the north of Palmerston North, and by no means possessed of rich-looking soils similar to those of Hawke's Bay Plains, the farmer carried 900 breeding ewes all through 1933 and fattened 120 per cent. of lambs, without purchasing any foodstuffs. The holding is subdivided into 7-acre fields or thereabouts, each with its water supply, and the sheep are kept in each field for only one day at a time. In the winter all of the ewes are in one flock, but in the spring and summer three flocks of about equal size are maintained. In winter the fields are fed for one day and spelled for 13 days, but when the flock is subdivided the spelling of fields is reduced to about 4 days after a 1-day grazing. One field—about 7 acres—was cut for hay, for the use of stock other than sheep, and to make certain that the sheep would not be short of feed in winter.

Four hundredweights per acre of a proprietary mixed fertiliser are applied as a topdressing every year.

(d) At Henderson about 11 miles out of Auckland, a 60-acre farm (including extensive buildings) maintains 45 Herd Book Jersey cows, and all calves, heifers, and bulls are reared, and the calves are the only animals receiving any purchased foodstuffs of any kind. About 600 pigs are kept on this farm all of the time, the yearly sales being about 2,000 animals, and a great deal of greenstuff is cut for these pigs. The pastures are kept in full growth by an annual topdressing of 600lbs. superphosphate and ½ ton lime per acre. Both hay and ensilage are made on the property for use in the winter, but no foodstuffs are purchased for the cows.

Plants in the New Zealand Pastures.

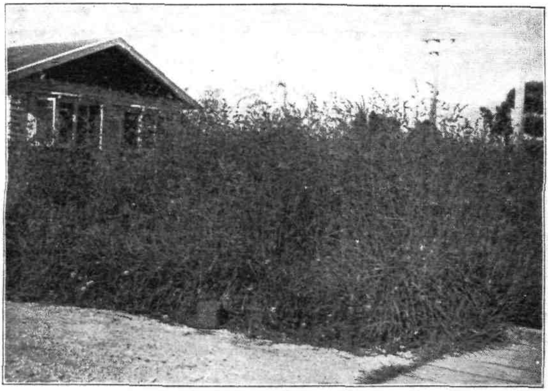
The plants in the pasture mixtures and their relative importance vary according to the soils, climate, and steepness of the country, but in a general way it can almost be taken for New Zealand that where pastures are well managed on the plains country they consist of Perennial Rye Grass and White Clover, and on the high land of Danthonia, with White Clover as well in many places. Practically all European pasture plants do so well in this country that all sorts of mixtures exist, but the outstanding pastures seen contained a well-balanced mixture of Perennial Rye Grass, White Clover, and Rough-stalked Meadow Grass (*Poa trivialis*), and some of the bulkiest pastures hold a fairly high proportion of Cocksfoot as well as the other three plants.

The development of good pastures does not appear to be the result of choosing the correct mixture when seeding down, but rather to the management of the pasture so as to keep down the coarser forage plants and to encourage those of finer quality. In neglected fields, and particularly in those which are understocked in the spring and early summer, a wonderful growth of White Clover is usually found, but instead of this being well-balanced with Perennial Rye Grass and *Poa trivialis* there is frequently found a luxuriant mass of Cocksfoot, Prairie Grass, *Poa trivialis*, Red Clover, and some Perennial Rye Grass, all maturing at different times, and in some cases Tall Fescue (*Festuca arundinacea*) again over-runs the fields. Adjoining fields judiciously managed show the perfectly balanced White Clover and Grass pastures which give such heavy grazing results, and when desired produce heavy crops of clean seed of good quality. It is found that correct balance can only be maintained by regularly and frequently grazing these pastures fairly hard, and again getting livestock on to them before the plants have become coarse and thick.

It is quite impossible to form a correct idea of the relative importance of the principal pasture plants being grown, during a visit of short duration to an extensive agricultural country, but considering how frequently they are seen, White Clover, Perennial Rye Grass, Cocksfoot, Rough-stalked Meadow Grass, and

Red Clover are of outstanding importance on the very fertile plain lands; Danthonia and White Clover suit the high lands; and White Clover, Cocksfoot, and Perennial Rye Grass are of the utmost value on the lands being reclaimed from the scrub.

It is impressive to see the wild and luxuriant growth of pasture plants along *practically all roadsides of New Zealand, and in every vacant block of land in the* towns. This tangled mass of growth consists, as a rule, of Cocksfoot, Tall Fescue, and Prairie Grass, 5ft. or more in height, Perennial Rye Grass about 3ft. 6in. high, Red Clover nearly as high, and the sole usually consists of White Clover, but sometimes includes Rough-stalked Meadow Grass or Kentucky Blue Grass. Although useless weeds are sometimes fairly plentiful, they are more often than not present in relatively small patches, or as scattered plants.



Roadside Growth of Pasture Plants in New Zealand, in which Cocksfoot and Tall Fescue are prominent. It is of common occurrence in townships in New Zealand to see strong growth of pasture plants along the roadsides, on vacant blocks, and in odd corners.

When some of the wetter lands are cleared, and when some of the richer pasture lands are neglected, Tall Fescue tends to take possession of the land, and makes dense, rank growth to the almost total exclusion of other pasture plants. Although this grass has some grazing value, it is not looked upon with favour, and the first step towards improvement of such pasture is the eradication of the Tall Fescue.

Temporary Pastures in New Zealand.

Where temporary pastures are desired it has become general to sow a simple mixture of Italian Rye Grass and Red Clover, using up to 25lbs. per acre of the former and 5 or 6lbs. per acre of Clover. Such a mixture supplies a lot of grazing, can then be cut for hay or ensilage, and recovers quickly to provide further grazings.

Grazing New Zealand Pastures.

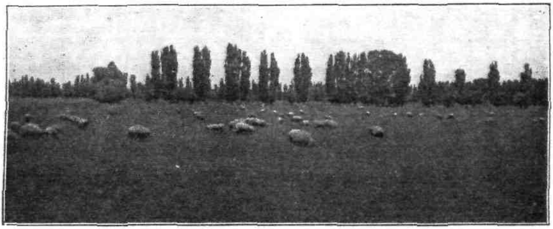
Rotational grazing is generally practised by most of the progressive livestock farmers of New Zealand, even to the extent of leaving the animals on the pastures for one day only at a time. This does not appear to be done with any idea

of getting more proteinous forage, but rather to prevent the fouling of the pastures, and to reduce the risk of eating-out the better-quality fodder plants. There is no need to look for more protein in these conditions, because White Clover is so plentiful in practically all grazed pastures. Regularly feeding the pastures down really short, and never allowing them to reach a rank stage, is essential to maintain luxuriant-growing pastures in good condition.

Other Treatments of New Zealand Pastures.

In many agricultural countries it is usual to regularly harrow pastures, but this practice does not appear to be very popular in New Zealand, and there seems to be a tendency to discontinue the use of implements which tear up the sod to any marked extent, and to use only something which will efficiently spread the droppings of animals without disturbing the roots of the pasture plants.

In most places care is shown in the removal of bad weeds from the pastures, and most New Zealand fields are remarkably free from really troublesome plants. Some farms were seen where attention to these pests was needed, and in a few instances bad weeds were very plentiful, but of the parts of New Zealand visited, these cases were exceptional and very far from the rule.



A properly managed Pasture in New Zealand, where the feed is kept grazed very close throughout the year. It has long been realised in New Zealand that pastures must never be allowed to become rank if full returns and long life are to be attained.

Except in the very best pasture-growing districts of New Zealand topdressing is usual, superphosphate being the fertiliser most generally applied, although quite a lot of lime is also being put on to the land. Dressings of 3 to 6cwts. of superphosphate per acre per year are not unusual, and 5 to 10cwts. of lime per acre are being added, in some cases every year, but more often every second year.

PRODUCTION OF HIGH-CLASS AGRICULTURAL SEEDS IN NEW ZEALAND.

At Palmerston North Pure Seeds Research Station very extensive and complete work is undertaken in connection with the standardisation, improvement, and multiplication of the seeds of most of the important agricultural crops grown in New Zealand, with the notable exception of wheat, work with which is undertaken at Lincoln Agricultural College. Besides research work, test plots of all pastures, for which applications for certification have been received, are sown down in comparison with standard check plots. Quite a lot of work is being done with Lucerne, Garden Peas, Rape, Mangels, &c., but the outstanding activities of the institution have to do with pasture plants, and particularly with White Clover and Perennial Rye Grass, and to a lesser extent, although still considerable, with Cocksfoot and Montgomery Red Clover.

A high degree of success has already been attained with the improvement and standardisation of both White Clover and Perennial Rye Grass, so much so that sufficient seed for about 30 acres of each will be harvested this year from plots of vastly improved strains of both of these very important pasture plants. This

seed is to be sown in several districts in New Zealand under the close supervision of officers of the Department of Agriculture, with the intention of making this season's distribution the starting point for certification of seeds, and in the near future all seed of Perennial Rye Grass and White Clover certified by the Department of Agriculture will have been derived from this seed. These strains will remain the basis of the source of seed for New Zealand until better ones are developed at the Station, when the process of multiplication and distribution will be repeated.

In connection with the certification of seeds, samples are collected by an officer of the Department of Agriculture from all fields for which applications for testing for certification have been made, and are grown in small plots alongside of standard check plots, and unless those being tested come up to one or other standard, certificates are refused.

Details of this seed-certification scheme, which is doing so much to improve the pastures of New Zealand, have been published in the *Journal of Agriculture* of New Zealand.

Besides conducting the necessary selection work in connection with the production of first-class seeds the Department of Agriculture does everything it can to encourage farmers to produce the very best seeds, and as a consequence New Zealand has developed a good name for small agricultural seeds. District Agricultural Instructors visit growers frequently, advising how close to feed pastures, when to remove livestock, when to harvest, &c., and, when possible, trace the origin of the seed from which good stands have been derived, when it seems at all likely that they can be brought into the certification scheme, even though application was not made in the year of establishment.

Producers of seeds strongly support the Department of Agriculture in its pure-seed activities, and farmers are so convinced of the advantages accruing from the use of certified seed that the demand is so brisk that all seed is absorbed and at so high a price that seed-growers are fully recompensed for any extra trouble and expense they may be put to.

The pastures of New Zealand have improved to a considerable extent since the inauguration of the Seeds Certification Scheme, and it is generally recognised that the improvement is likely to be progressively greater as time goes on, and that the development of this scheme has been one of the outstanding successes of the Department of Agriculture, and is of the utmost economic value to the Dominion.

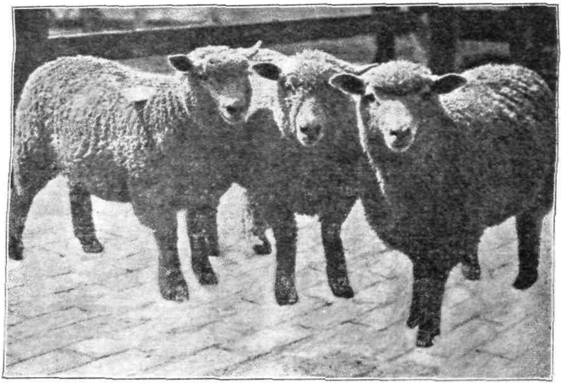
SHEEP IN NEW ZEALAND.

Although New Zealand maintains about 29,000,000 sheep, which produce about 270,000,000lbs. of wool annually, she cannot be looked upon as a serious competitor with Australia for wool. The climatic conditions obtaining in much of the Dominion are such that the British breeds of sheep, or at all events some kind stronger and more robust than the Merino, must be kept, and so large quantities of "fine" wool similar to that cut from the Merinos, which do so well in Australia, cannot be expected. Not only does a large proportion of New Zealand receive heavy annual rainfall, but it is so well distributed throughout the year that the pastures are practically evergreen, and footrot is so prevalent amongst sheep that it is essential to use animals of the Romney Marsh breed in many parts of the country, and advantageous in most. The trouble is so serious in some pl.ces that even the Romney Marsh sheep, with their very high resistance to the disease, suffer a lot of damage.

Because of the conditions that obtain, New Zealand has become a very important producer of mutton and lamb, and has exploited the export markets so thoroughly that she holds pride of place both for quantity and quality. Of recent years about 8,000,000 carcasses of lamb and about 2,000,000 carcasses of mutton have been exported annually, and are so well bred, properly fattened, carefully slaughtered and shipped, and so judiciously advertised that they have commanded prices above those received for carcasses exported from other countries to the same markets.

New Zealand is admirably suited for the type of sheep-farming now being practised, because the Dominion has so much good fattening country that the great bulk of the lambs reared can be fattened whilst still on their mothers, and there is ample pasturage remaining to fatten the lambs reared on poorer pastures, and also to fatten the millions of mature sheep which are used for home consumption and for export overseas.

With the further development of the pastures of the sheep-farming districts a considerable increase in the number of sheep maintained must follow, and on present appearances it seems as though the development will be along lines similar to those now being followed, and that in the near future an improvement will be made in the wool being produced by long-woolled sheep rather than by replacing the present type of sheep with other breeds carrying better quality wool. It is quite possible that the improvement in wool quality will be brought about much sooner than is generally anticipated, because the recently perfected Benzol Test for Hairiness



[Photo. from *New Zealand Farmer*.

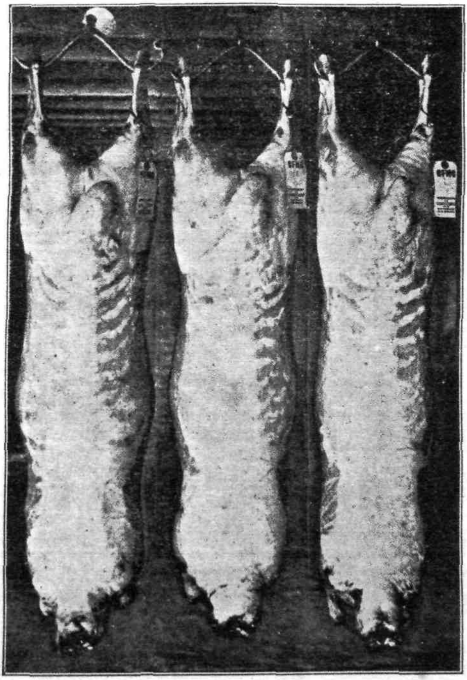
First Prize Pen of Fat Lambs in the 1934 North Canterbury Competition. All pens of lambs entered in this important competition were sired by Southdown rams, although the dams of the lambs varied as to breeding.

in Wool, as developed by Professor Peren, the Principal of Massey Agricultural
College, and some members of his staff, promises to lead to the rapid elimination
work-om the Long-wool Studs of all animals likely to breed progeny containing hair
multiplicat fleeces, a defect quite common now. The test has only been in operation a
New Zealand;le, and although a charge of 1s. per ewe, and 3s. per ram is made, stud-
at Lincoln Agr very interested in it, and at the present time over 5,000 stud sheep are
for which appli fleeces tested at Massey College.
parison with stan
Garden Peas, Rap

New Zealand Fat Lambs.

have to do with pacational treat for any agriculturist interested in the production of
Rye Grass, and to rt to visit a Slaughtering and Freezing Works in New Zealand
Montgomery Red ib-killing season, for then can be seen thousands of lambs of almost
A high degree ch, conformation, colour, and weight. This is rendered possible,
standardisation of of the enormous numbers of lambs produced, but largely because
sufficient seed for ambs are bred on similar lines, and fattened on similar types of
vastly improved

pasture. The vast majority of the lambs are sired by Southdown rams, and are out of pure-bred Romney Marsh ewes or crossbred ewes containing a lot of Romney Marsh blood. It was such breeding that the famous Canterbury lambs possessed, and on which their reputation was built, and these lines have been followed to such an extent in New Zealand that all of the best quality lambs produced in the country are now known as Canterbury Lamb. As a matter of fact, of recent years lambs from several places in the North Island have been of better quality than



[Photo. from *New Zealand Farmer.*

The Carcasses of the Winning Pen of Fat Lambs in the 1934 North Canterbury Competition.

those produced on the Canterbury Plains, and they were in most cases out of Romney Marsh ewes by Southdown rams. The ewes in the North Island are almost wholly of the Romney Marsh breed, and other than those mated to Romney Marsh rams to keep up the flocks, most of them are mated to Southdown rams for the production of fat lambs. It is generally stated that the South Island lambs have not deteriorated, but those bred farther north have been improved to a greater extent, but on the other hand it has been suggested, and not without reason, that

there has been deterioration, and that it has been brought about because of the fact that good deep-bodied pure-bred and three-quarter-bred long-woolled ewes, which were general at one time, have been replaced by Merinos and small, culled crossbred ewes from sheep stations in other districts. The practice has developed of fattening the mothers of the fat lambs soon after the lambs are sold, selling them for export, and then buying a fresh lot of ewes. The ewes purchased from poorer country are not nearly so good as were the ewes the farmers bred formerly themselves. The deterioration, if any, cannot be due to the sires, because Southdown rams have always been used, and the quality of these has improved of recent years.

Most of the sheep seen in the top portion of South Island and the North Island up as far as Auckland were of the Romney Marsh breed or crossbred Romney Marsh, with some Southdowns and Corriedales. Most of the ewes are of very good type, with just a few on the rough side, and the majority are usually mated to Southdown rams. On the poorer country the lambs do not fatten too well whilst on their mothers, and these are weaned and sent to the good pastures on the plains to be fattened for market.

Lambs for export overseas are purchased on the farms, the buyers picking the lambs fit for slaughter. It is the general practice for the buyers of lambs to distrust their eyes and actually to handle every lamb purchased. Very seldom are lambs intended for export taken from their mothers before the day they are to be slaughtered, and so they practically always go to the butcher still carrying their natural bloom.

Although most lambs are slaughtered at weaning, about 20 per cent. are only forward stores when taken from their mothers, but as they are weaned on to first-class pastures in better districts they do not take long to fatten, and by all accounts they recover their lost bloom and kill-out really well.

The wonderful pastures of New Zealand ensure the production of high-quality lambs in enormous numbers, and in a way that can never be attained in countries without these advantages. Luxuriant pastures which are green all of the year around are common in New Zealand, and cases were seen in which nine ewes per acre were carried throughout the year; all their lambs were fattened whilst on their mothers, and then nearly 20 sheep per acre and a bullock to 2 acres were fattened in the summer.

Besides the luxuriance of the pastures, another factor ensuring large numbers of lambs is the very high lambing percentages secured on the farms. Anything below 115 per cent. to 120 per cent. of tailed lambs is considered low, and one farmer claimed to have attained a lambing of 146 per cent. for his whole lambing flock in 1934. These high figures are largely due to the fact that pure-bred long-woolled ewes are maintained on many fat-lamb farms as the dams of the lambs, but is also partly due to the high rate of fertility of Southdown rams, and to the care and attention given to the flock at mating time. It has been suggested that the high percentage of lambs secured when Southdown rams are used is not due so much to their exceptional vigour, but to their habit of always looking for fresh ewes and the rarity with which they will serve the same ewe twice, as is common with some other breeds.

NEW ZEALAND MEAT PRODUCERS BOARD.

New Zealand is a very important exporter of meats of all kinds, a position she has held for a considerable time, the growth of these exports being very rapid once the possibilities of landing frozen meat in the United Kingdom in good order were established. The first shipment of frozen meat from the Dominion arrived in London in May, 1882, in the sailing ship *Dunedin*, and consisted of 3,521 frozen sheep, 449 frozen lambs, and 22 frozen pigs, whilst the 1933-34 consignments reached the enormous figures of 1,813,802 carcasses of mutton, 8,671,351 carcasses of lamb, 440,979 carcasses of pork, 371,140 quarters of beef, and 743,573 freight-carcasses of 60lbs. of boneless beef and sundries, or an equivalent of 9,051,062 freight-carcasses of 60lbs. weight.

As this meat-export business was growing into such huge proportions, dissatisfaction with the differences in the prices paid by the consumer and those received by the producer was developing also, and at the same time the increasing competition from other countries meant that the utmost care in preparation for marketing was necessary, and so in 1922 the Government of New Zealand passed an Act for the creation of a Meat Producers Board to control the export of meat.

The Board is composed of two members appointed by Government, five members elected by producers of meat for export, and one member representing stock and station agents, and the first meeting was held on 14th March, 1922.

The Act gave the Board power to make a levy of 2d. per carcass of mutton, lamb, pork, and veal, and 1d. a quarter or 2d. a side for beef; but the rates were fixed by the Board at half of the maximum allowed, and in December, 1930, the levies were reduced by 25 per cent., and during the period have yielded between £29,000 in 1925-26 and £42,100 in 1922-23, with £34,400 collected in 1933-34. Of the income of the Board, 75 per cent. is earmarked for advertising purposes.

The principal functions of the Board are to regulate shipments so that there are no temporary shortages nor gluts on the market, to endeavour to reduce costs between producer and consumer, to present the meat to the purchaser in the best possible condition, to advertise adequately the meat in consuming countries, and to assist producers whenever possible.

As the Board makes all contracts for the carriage of the whole of the meat exported from the Dominion the regulation of shipments was a natural outcome.

Considerable reductions in the costs of handling the meat have been brought about since the Board came into existence, much of which was due to the activities of the Board. Reductions in freight have been made on the 1922 rates of from 40 per cent. to 58 per cent. on various lines, and have meant the following very considerable savings:—

On 60lbs. weight sheep	3s. 8d. per head.
On 35lbs. weight lamb	2s. 0½d. per head.
On 120lbs. weight pig	9s. 2½d. per head.
On 720lbs. weight bullock	40s. per head.
On 500lbs. weight cow (boned) ..	from 38s. 5d. to 43s. 9d. per head.

Reductions have also been made in insurance rates, charges of the Port of London Authority and other British port controls, slaughtering, freezing, and handling charges in New Zealand, and in the cold-storage rates in England. The latter is estimated to save £50,000 per annum.

Everything possible is done to present the meat to purchasers in the best possible condition, and for the purpose carcasses are now carefully graded, multiplicity of marks has been reduced by standardising grade marks, delays, and excessive handling have been lessened because of the reduction in number of parcels which followed the limiting of consignments to 250 or more lambs or sheep, and to superintend loading the Board has appointed inspectors.

The advertising of New Zealand meat in the purchasing countries is one of the outstanding features of the activities of the Board, and has been carried out so efficiently that it is the envy of all other exporting countries. Having available for the purpose £25,800 (75 per cent. of £34,400 levies), which is obtained from the very small levies of ¾d. a carcass of mutton, lamb, pork, and veal, and ¾d. a quarter of beef, and this after all administration and other expenses are paid, is sufficient justification for the existence of the Board, and judiciously handled must lead to the popularisation and sales of New Zealand meats.

Meat producers in the Dominion are helped by the Board in all sorts of ways, such as the making of grants to (*a*) Low Temperature Research Station at Cambridge; (*b*) the Entomological Department of the Cawthron Institute at Nelson for investigating insect pests of animals and pastures; (*c*) the Plant Research Station at Palmerston North, for combating the ravages of the White Butterfly; (*d*) Canterbury Agricultural College at Lincoln for investigating ewe

and lamb mortality; (e) Massey Agricultural College for Wool Research; (f) Pig-recording Clubs; (g) Competitions for Boys and Girls Pig Clubs; and (h) Agricultural Shows for Special Prizes. Lectures are arranged in various country centres on Livestock Management, and the Board financed an expedition to South America in search of insects to control the noxious weed "bidi-bidi."

The impression gained from discussing the Meat Producers Board with interested parties is that it is of very great value to the meat industry of New Zealand, and producers are overwhelmingly of the opinion that they could not do nearly as well without its assistance.

BRANDING OF MEAT FOR EXPORT TO GREAT BRITAIN.

As all meat reaching Great Britain after 7th January, 1935, had to be branded or stamped, stencilled, or printed in ink or stain in defined positions on the carcass or joint, it was of interest to see how New Zealand exporters were facing the new regulation, and it was found that the method adopted was not unduly disfiguring the carcasses. By applying a light-brown ink on rubber stamps and using as little pressure as possible an indelible brand was put on the meat which was readable yet not unsightly, and where the following mixture was used to carry the stain the brand became fast a few minutes after application, and would not run even if purposely wetted:—

Water	6 parts by weight.
Methylated Spirits	6 "
Sugar	3 "
Glycerine	1 "
Stain to suit.	

DAIRYING IN NEW ZEALAND.

The dairying industry of New Zealand is of such huge dimensions that considerable time would be necessary to investigate it in any detail, and as this time was not available no effort was made to look into it at all deeply. From a casual look at some of the most productive agricultural districts of the Dominion it appears that dairying is the most important agricultural activity which can be undertaken under present conditions, and if this is so, dairying will probably always be of some account in New Zealand's primary production.

In travelling about the country districts one cannot help being struck by the very high proportion of Jersey cattle—pure bred and grade—seen everywhere, and many of them are really high-class animals. Even more striking, perhaps, is the frequency with which first-class Jersey bulls are seen with the herds, whether they be stud-book or ordinary dairymen's herds. The Department of Agriculture has concentrated in recent years in encouraging the grading-up of crossbred herds and the improving of the better bred herds by the use of high-quality bulls, and as a consequence good bulls are to be seen almost everywhere. The impression gained, after approaching numbers of people on the matter, was that this policy is having a marked effect on production, and that it will continue to do so.

That the growth of the dairying industry has been rapid and has reached very important proportions can easily be realised by a glance at the following table:—

COWS AND BUTTERFAT IN NEW ZEALAND.*

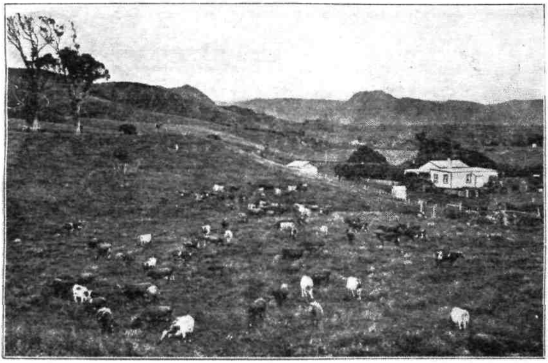
Season.	Cows (in milk and dry).	Butterfat per cow.	Total Butterfat.
		Lbs.	Lbs.
1901-02	381,000	127.20	49,000,000
1911-12	656,000	140.10	92,000,000
1921-22	1,137,000	174.97	199,000,000
1931-32	1,702,000	199.65	340,000,000
1933-34	1,933,000	220.80	427,000,000

* Dairy Industry Commission Report (H. 30 of 1934).

The increase in the industry, as disclosed by the above figures, is really great, and nowhere more than in the production of butterfat per cow, which has been raised for the whole of New Zealand from 127.20lbs. per cow to 220.80lbs. per cow in just over 30 years, and the people closely associated with the industry expect this improvement to continue. The credit for the increased returns per cow is usually recognised as being due to improved pastures, herd-testing, discriminate breeding and culling, and importation of stock.

Most of the land carrying high-producing dairy herds is top-dressed annually, and practically all of the dairying country gets applications of fertiliser now and again. It is estimated that about 5,000,000 acres of New Zealand are devoted to dairying, and although all of this is not top-dressed every year the great bulk of it has had applications of manure during the past three years.

Herd testing is so highly thought of in the Dominion that 287,000 cows were under test in 1933-34, and these averaged 262.44lbs. of butterfat per cow, as against 220.80lbs. per cow for the whole of New Zealand.



[Photo. from *New Zealand Farmer*.

A Dairy Farm in New Zealand. Dairying is the principal agricultural activity of the Dominion. The natural conditions encourage the production of milk, and the regularity and coolness of the climate favour the manufacture of good quality dairy products.

Co-operation Among New Zealand Dairymen.

Supporters of co-operative schemes make the claim that much of the progress made by the dairying industry in New Zealand has been due to the fact that the great bulk of the manufacturing of dairy products is done by co-operative concerns, and whether this is so or not the organisations are certainly an important part of the industry. Of the 140,000 tons of butter exported in 1933-34, all but 8,000 tons were shipped by co-operative companies, and of the 110,000 tons of cheese, proprietary firms only shipped 2,000 tons.

Export of Dairy Products from New Zealand.

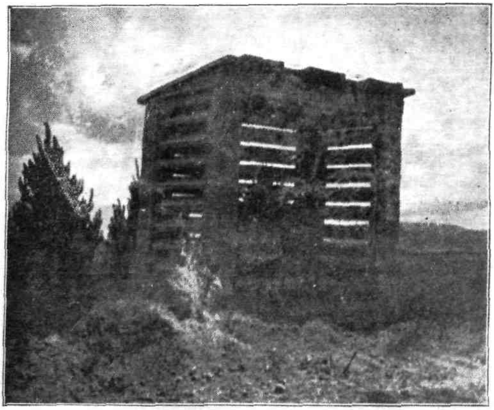
Although New Zealanders as a people eat more butter per head of population than those of any other country, and a lot of cheese as well, still they only consume a small proportion of what is manufactured and leave very large quantities to be exported. Of the 164,163 tons of butter made in 1933-34, nearly 84 per cent. was exported, and of the 106,288 tons of cheese made in the same year 97½ per cent. was sent overseas.

COST OF MANUFACTURING BUTTER AND CHEESE.*

Approximate Total Costs and Charges at per lb. of Butterfat.

Year.	BUTTER. From factory gate to F.O.B. ocean steamer (including cream collection).	CHEESE. From "in factory" to F.O.B. ocean steamer.
	Pence.	Pence.
1925	2.65	4.00
1926	2.63	3.91
1927	2.59	3.68
1928	2.21	3.41
1929	2.06	3.39
1930	2.00	3.20
1931	1.97	3.02
1932	1.95	2.83
1933	1.69	2.62
1934	1.67	2.50

* Dairy Industry Commission Report (H. 30 of 1934).



A louvred roadside shade for Cream and Milk Cans, as frequently seen in New Zealand. Despite the relatively cool climate of the country great care is taken to see that cream and milk reach the factories in good condition.

These figures show very clearly that not only has the total production of dairy produce in New Zealand increased by leaps and bounds, but efficient and up-to-date factory methods have been followed, enabling manufacturers to reduce progressively the costs of production of both butter and cheese. A reduction from 2.65d. to 1.67d. per lb. of butterfat in the making of butter, and from 4.0d. to 2.5d. per lb. of butterfat in the making of cheese in a period of ten years are notable achievements, and must have helped the industry very considerably.

Dairy Farm Instruction.

Besides the activities of the Dairy Branch of the Department of Agriculture a voluntary dairy farm instruction scheme operates in New Zealand and is subsidised by the Government to the extent of paying half of the salary of the instructor. If a dairy factory or group of factories desire an instructor a trained

man is provided by the Government, who pays his salary, and the factory or factories refund half of the salary and pay all travelling expenses. The instructor works in association with factory managers and calls on the suppliers of the factories engaging him.

Natural Conditions for Dairying.

In many parts of New Zealand the natural conditions are almost ideal for dairying, and where there is a deficiency it is usually the easily-corrected shortage of phosphorus. The pastures are so luxuriant and constant throughout the year, and the climatic conditions are such that there is no need to close-house the animals, and so the cows are fed almost wholly on pasture. Pastures are generally looked upon as the cheapest of all milk-producing foodstuffs, and certainly have the reputation of giving butter and cheese a better flavour, and of supplying them with more vitamins.

That many of the dairy farms of New Zealand are suitable for the purpose can be seen from the following extracts from the report of the survey made by the Department of Agriculture of dairy farms on which all cows were milked by machines:—

Farms surveyed	550
Total area	68,250 acres
Average area	124 acres
Cows maintained	0.46 per acre
Butter-fat produced	117.73lbs. per acre
Average butter-fat	254lbs. per cow

PIGS IN NEW ZEALAND.

Little opportunity offered during the hurried tour through some of the agricultural districts of New Zealand to inspect many pigs, and of those at killing works and on farms the Tamworth breed predominated. The animals seen, whether pure-bred Tamworths or crossbreds containing a lot of Tamworth blood, were of excellent type, but the relatively few of other breeds seen were not quite of the quality demanded at present.

Under existing conditions it does not appear as though New Zealand will become an important producer of grain, and if this remains so the Dominion will always be handicapped in connection with the production of bacon pigs. There is a very plentiful supply of skim milk, buttermilk, and whey, and so pigs can be reared easily to porker size, but to purchase sufficient grain to continue the animals to bacon size, and then have to ship to markets on the other side of the world, does not at the moment appear to be an attractive economic proposition

Pigs are an important form of livestock for such a dairying country as is New Zealand, despite the limited amount of grain available, and during 1933-34 97,448 breeding sows were maintained in the country, and the slaughterings totalled 766,627 animals.

OTHER AGRICULTURAL PRODUCTS.

New Zealand is an agricultural country which can produce all of the articles usually found in temperate climates, and a few of the productions of the Dominion, other than those already dealt with, have some features of interest to A .stralians.

Wheat.—Although only a relatively small quantity of wheat is grown in New Zealand, a good deal of research work is being undertaken in connection with the crop. At Lincoln Agricultural College, where the field work connected with the Wheat Research Station is carried out, the collection of wheat plots is probably the greatest being maintained in any part of the British Empire. All field tests laid down are replicated twenty times, and as most of the plots are growing cross-fertilised wheats, the work entailed is enormous. The principal aim of the wheat-research workers is the development of heavy-yielding wheats producing grain of good quality, and Dr. Frankel is confident that a new crossbred wheat, to be distributed this year, is very close to the desired type.

Poultry.—New Zealand is handicapped as far as poultry production is concerned because the Dominion does not produce a surplus of wheat or other grain suitable for large numbers of egg-laying fowls, and so it does not appear to be at all probable that this country will become an important exporter of eggs in the near future. In the beginning of December, 1934, new-laid stamped eggs were being retailed at 10d. to 1s. 1d. per dozen in the principal towns.

Fruit.—The climatic conditions of New Zealand are such that all temperate-climate fruits can be grown in large quantities when economic conditions warrant it, but at present the quantities exported are not very great, with the exception of apples. No effort was made to investigate fruit-growing activities in the Dominion, but it was impossible not to notice that the orchards seen, which were mainly growing apples and in some fewer cases pears, were very well cared for, the trees being large and healthy and the soil well tilled and clean.

Strawberries offered for sale were wonderful, both as to size and colour, whilst the smaller kinds also had good flavour. Some of them were so large that there was only room for nine in the top layer of an ordinary 1lb. punnet, *i.e.*, three rows of three strawberries. Few punnets showed more than four rows of berries, even of the smaller varieties. Strawberries were being offered at 9d. to 1s. per punnet.

Grapes from California were on sale at 1s. per pound, and were in really good order, and as so many were displayed it seems that there is a fairly ready sale for them even at this price.

The oranges offered for sale consisted of fair to poor South Australians, "Sunkist" and "Blue Goose" from California beautifully graded and well wrapped, and some fair Jamaica samples. Very small sweet oranges from South Australia were retailed at from ten to five for 1s., whilst Valencias of very fair quality were bringing up to three for 1s. The Californian oranges were of a lemon-yellow colour, with fine-textured skins, and were well cleaned, beautifully graded, nicely packed, and opened up in really good order. They were selling at four for 1s. The Jamaica fruit was also of a yellow colour, but were rougher in every way than the American fruit and were sold at six for 1s.

Lemons being retailed in the shops were either of very poor quality or small. The "Sunkist" lemons from California were really small, but were nicely graded and well prepared for market, and were selling at six for 1s., whereas the other type, which were locally grown, only brought 1s. per dozen, but were quite rough.

Dried fruits exhibited for sale consisted of Californian and Australian, with Dried Figs from Turkey. Most Australian samples compared quite favourably in appearance with the Californian, except Sultanas, in which case the American samples were much superior in colour.

Relatively poor tomatoes were being sold at 1s. to 1s. 4d. per pound, but even at this high figure at the beginning of December the difficulties of transport would probably prevent South Australian shippers exploiting the market.

Wine and Brandy.—Very little wine is made in New Zealand, and most of what is used in the country must be imported, as well as the brandy. A little South Australian wine was seen exhibited for sale, but South Australian brandies could neither be seen nor heard of anywhere.

RECLAMATION OF LAND IN NEW ZEALAND.

An interesting experiment in the reclamation of land is being conducted at Napier. As a result of the earthquake of four years ago (February, 1931), which wrecked the town of Napier, the bed of the sea-marsh situated directly behind the town was raised some feet in height, and most of it, to the extent of thousands of acres, is now above sea level. The authorities controlling the town and neighbourhood of Napier, with some help from Government, have set about reclaiming this area for small holdings, and with very promising results, particularly as the area was covered with sea water only four years ago.

A small part of the area had drains cut some 18 months to two years ago, houses and sheds were erected, and quite a lot of families have already been settled. The salty land was well ploughed and planted, in most cases to mixed pastures, but small areas were used to try several other crops. Even though the period is so short since sea water was on the land, fairly good pastures have been established already on all of the well-drained places a bit higher than the general run of the country, and in some spots the body of feed is really good. Very few small areas of land in the portions already settled are still bare, but

A 4-year-old Pasture on Reclaimed Pumice Land in New Zealand, which is capable of carrying two cows to three acres. Although considered useless until quite recently, the seeding to pasture mixtures, applying at least 3cwts. of superphosphate per acre per year, and consolidation with rollers and the tramping of stock, quickly renders this country into really good livestock farms.

there is a fair amount where the pasture plants are only just established, with the plants rather small and stunted. The rainfall of the district is about 35 inches per annum on the average, and the degree of success already attained is such that the possibilities of good results for the whole scheme appear very promising.

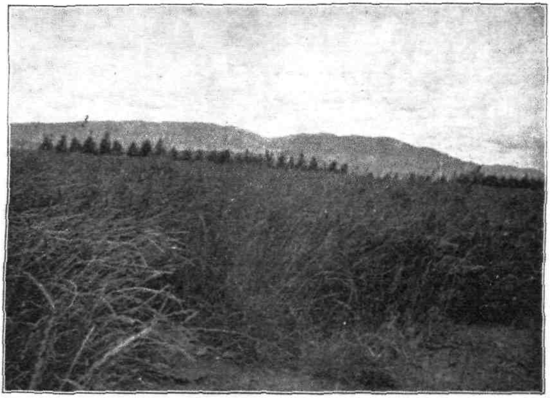
Drains have been cut over most of the area not already settled, parallel to one another, and placed about 2 chains apart. Although this work had only been done a few months previously, there was already a strong growth of plants of various kinds, including considerable areas of Tall Fescue and King Island Melilot, on most banks and high places. The appearance of these forage plants (poor though

they are considered to be in New Zealand) so soon after the surplus of saline water has been removed, augurs well for the rapid conversion of this area from a useless waste to fertile farming land.

Reclamation of Pumice Lands.

The Government of New Zealand is reclaiming what are known as Poor Pumice Soils, of which there are considerable areas in the North Island, and which, until quite recently, have been looked upon as being too infertile to be of much value for agricultural purposes. The strip of country which is largely composed of these soils commences south of Lake Taupo, stretches across the North Island, and extends northward to the Bay of Plenty.

The soils, whether on plains or in fairly steep hillocks, are of a sandy nature, and need much consolidation before many kinds of crops can be grown. In its natural state, covered as it is with stunted tangled scrub, of which the kind of tea-tree known as "Manuka" is the principal plant, and being so loose and open



A pure stand of Perennial Rye Grass on recently-reclaimed pumice land in New Zealand.

at the surface with rather coarse gravel at fairly shallow depths, it is most unpromising country from an agricultural point of view, and the results obtained by the Department of Agriculture are therefore really surprising, and must be most gratifying to those who sponsored the scheme.

The Government provided plant and engaged men from the ranks of the unemployed to develop an area of some thousands of acres in the heart of the pumice-soil country, and after pastures were established, subdivided the land into dairy farms, erected buildings and fences, planted breakwinds, and leased the holdings to applicants on Renewable Leases. The cost to get these holdings into a reasonable condition for settlers was about £19 per acre, but it is generally conceded that the same work could be done by skilled labour at a figure not exceeding £15 per acre.

The Demonstration Farm conducted by the Department of Agriculture at Ngakuru, in the centre of one of the areas developed by Government, was seeded down three years ago, and although only 90 acres in extent, carries 60 cows in full milk, 3 horses, and rears all young stock, and although 51 acres were shut up for hay during November and early December, the grazing animals could not keep the pastures fed down sufficiently close.

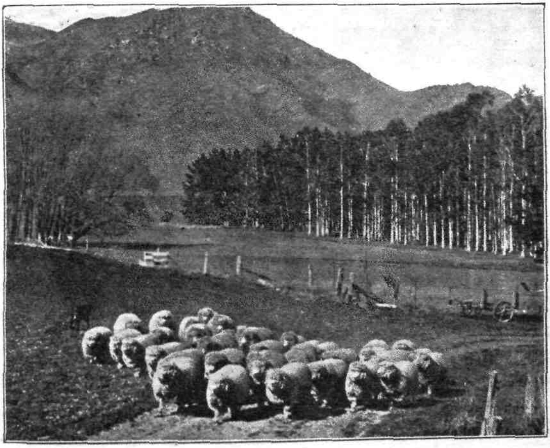
Judged by the results secured so far, it appears that three years after seeding the land to permanent pastures it will carry at least two milking cows to 3 acres and rear all young stock.

In establishing pastures on these pumice soils, the scrub is burnt, the land ploughed to a depth of 5ins. to 6ins., and then seeded with a mixture of 12lbs. Perennial Rye Grass, 6lbs. Cocksfoot, 3lbs. Crested Dogstail, 2lbs. Brown Top, 2lbs. Yorkshire Fog, 2lbs. White Clover, 1lb. Red Clover, and 1lb. *Lotus major* to the acre. At seeding a dressing of 3cwts. superphosphate per acre is given, and a further application of 3cwts. per acre within four months of seeding.

The pastures receive an annual application of 3cwts. superphosphate per acre. The tramping of livestock consolidates this country more and more each year, and as this is brought about the pastures improve.

NEW ZEALAND DEPARTMENT OF AGRICULTURE.

The Department of Agriculture of New Zealand is favourably known throughout the world, and more particularly in connection with the wonderful pasture improvement work it has so successfully undertaken, and in its understanding of



[Photo. from *New Zealand Illustrated*, 1935.

A New Zealand Stud Sheep Farm nicely located and well protected.

economic dairying production, but as no opportunity offered to investigate closely its administration, it will suffice to draw attention to some differences to our methods:—

1. Veterinarians and all officers connected with animal and meat matters are officers of the Department, as they are in almost all countries in the world.

2. For instructional and inspectorial duties New Zealand is divided into four districts, each of which has a small sub-branch of the Department, with headquarters in one of the larger towns. These sub-branches are further subdivided into Fields Division, Livestock Division, and Fruit Division, with a Fields Superintendent and some Agricultural Instructors, a Livestock Superintendent, with Veterinary Surgeons and Meat Inspectors, and a Fruit Superintendent with assistants.

SUMMARY OF IMPRESSIONS GAINED IN NEW ZEALAND.

1. New Zealand is world-famed for its agricultural production, the quantity being extremely high for the size of the country and the relatively small population.

2. New Zealand is rightly described as one of the gardens of the world.

3. The export surpluses of agricultural products consist almost wholly of animal products.

4. The soils and climate of New Zealand are very favourable from an agricultural point of view, particularly for the development of evergreen pastures.

5. The pastures of New Zealand are probably the best in the world.

6. Appreciable areas of pastures carry nine or more breeding ewes per acre throughout the year, fatten up to 120 per cent. of lambs, then fatten several wethers or old ewes per acre, and some bullocks.

7. Most European pasture plants do well in New Zealand, but the principal plants used in pastures at present are White Clover and Perennial Rye Grass. Other pasture plants of outstanding importance are Cocksfoot, Rough-stalked Meadow Grass, Danthonia, and Red Clover.

8. Much of the success attained with pastures in New Zealand is due to intelligent management. It is generally recognised that correct balance can only be maintained by regularly and frequently grazing the pastures fairly hard, and again getting livestock on to them before the growth becomes coarse and thick.

9. Italian Rye Grass and Red Clover are used as a simple mixture where short-period pastures are required.

10. Rotational grazing is practised to prevent fouling the pastures and to reduce the risk of eating out the better-quality fodder plants, rather than seeking more proteinous forage.

11. The stirring of the surface of pastures does not appear to be popular in New Zealand, but the droppings of animals are spread frequently with light harrows or something of the kind.

12. Great care is taken by most graziers to remove bad weeds from pastures.

13. Top dressing pastures with superphosphate is general, except in the very best districts, and 3cwts. to 6cwts. per acre per year is the usual dressing. In some places lime, at the rate of 5cwts. to 10cwts. per acre every second year or so, is applied.

14. The Seed Certification Scheme in operation in New Zealand is having a marked effect in the improvement of pastures.

15. New Zealand can maintain, excellently, large numbers of sheep of a type stronger than Merino, but does not appear likely to become a serious competitor with Australia in the production of fine wools.

16. New Zealand holds pride of place in British markets for fat lambs, which she produces well, properly prepares for market, and judiciously advertises.

17. New Zealand exports over 8,000,000 lamb carcasses a year, the vast majority of which are sired by Southdown rams out of pure-bred Romney Marsh ewes or crossbreds containing a lot of Romney Marsh blood.

18. Lambs are purchased on the farms in New Zealand and arrangements for killing are then made so that they can be taken from their mothers to be slaughtered the same day.

19. Very high lambing percentages are secured in New Zealand, which appears to be due largely to the pure-bred Longwool ewes, or the crossbred ewes with a lot of Longwool blood, and the high fertility of Southdown rams.

20. In 1922 the Government created a Meat Producers' Board which has functioned very actively, and has given general satisfaction to most parties concerned.

21. The principal functions of the Board are to regulate shipments so that there re no temporary shortages nor gluts on the market, to endeavour to reduce costs een producer and consumer, to present the meat to the purchaser in the best le condition, to advertise adequately the meat in consuming countries, and to oducers wherever possible.

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22. Considerable reductions in the costs of handling the meat have been brought about since the Board came into existence. Reductions in freight have been made on the 1922 rates of from 40 per cent. to 58 per cent. on various lines and have meant the following very considerable savings:—

	s.	d.	
On 60lbs. sheep	3	8	per head
35lbs. lamb	2	0½	"
120lbs. pig	9	2½	"
720lbs. bullock	40	0	"

500lbs. cow (boned), from 38s. 5d. to 43s. 9d. per head

Reductions have also been made in insurance rates, charges of the Port of London Authority, and other British port controls, slaughtering, freezing, and handling charges in New Zealand, and in the cold-storage rates in England. The latter is estimated to save £50,000 per annum.

23. The Meat Producers' Board has over £25,000 a year available for advertising New Zealand meat, from small levies of ⅛d. a carcass of mutton, lamb, pork, and veal, and ⅜d. a quarter of beef, and this after all administration and other expenses are paid.

24. The Board helps producers in the Dominion in all sorts of ways, such as making grants to shows, research work, entomological investigations, &c.

25. The branding of exported meat has been done successfully in New Zealand by using the following fluid:—

Water	6 parts by weight
Methylated spirits	6 parts
Sugar	3 parts
Glycerine	1 part

Stain to suit.

26. Jersey cattle, pure-bred and grade, predominate in New Zealand.

27. High-class Jersey bulls are to be seen throughout the dairying districts of New Zealand.

28. Cows in milk have increased in New Zealand from 381,000 in 1901 to 1,933,000 in 1933, and production of butterfat per cow from 127.20lbs. to 220.80lbs.

29. Co-operative Dairy Companies play an important part in the dairying industry of the Dominion, for of the 140,000 tons of butter exported in 1933-34 all but 8,000 tons were shipped by Co-operative Companies, and of the 110,000 tons of cheese, proprietary firms only shipped 2,000 tons.

30. Costs of manufacture of butter and cheese have been reduced very considerably in New Zealand; butter from 2.65d. per pound of butterfat in 1925 to 1.67d. in 1934 and cheese from 4d. per pound of butterfat to 2.5d.

31. If a dairy factory or group of factories desire an instructor, the Government provides a trained man and the factory pays half the salary and all travelling expenses. The instructor deals principally with clients of the factory engaging him.

32. The natural conditions of New Zealand are almost ideal for dairying, and where there is a deficiency of any kind it is usually the easily corrected shortage of phosphorus.

33. It does not appear that New Zealand will ever become an important grain-producer, and if this is so the Dominion will always be handicapped in producing bacon pigs. In such an important dairying country pigs will continue to be essential, but are more likely to be marketed as porkers than baconers.

34. New Zealand land-reclamation schemes, particularly of the pumice soils, are proving very successful, and will add a considerable area of good pasture to the country's already large area.

35. In New Zealand, veterinarians and officers dealing with animal and meat matters are attached to the Department of Agriculture, as they are in almost all countries of the world.

(To be continued.)

THE STATE EXPERIMENT ORCHARD, COROMANDEL VALLEY, NEAR BLACKWOOD, SOUTH AUSTRALIA.

[*By* GEO. QUINN, *Chief Horticultural Instructor.*]

(*Continued from page* 57.)

In Table I. the average girth measurements of the various rootstocks, stem-pieces, and stems, together with the mean height and limb spread attained by each of the fruiting varieties under trial—as applied to from 5 *to* 24 trees in each instance—are set forth.

TABLE I.—*Showing the average dimensions of trunk and limb spread developments of apple trees grown on Northern Spy, Winter Majetin, and Cole's Blight-proof Paradise rootstocks, and on intermediate stem-pieces of Dunn's Seedling, Rokewood, Winter Majetin, Cole's Blight-proof Paradise, and Rome Beauty, all previously grafted on Northern Spy rootstocks:—*

No. of Trees.	Average Girth Rootstocks. (Inches.)	Average Girth Stempieces. (Inches.)	Average Girth Tree Stems, 10-12ins. above Union. (Inches.)	Average Mean Height of Trees. (Feet.)	Average Mean Spread Trees. (Feet.)	Average Elevation of Widest Spread of Trees. (Feet.)
NORTHERN SPY ROOTSTOCKS.						
24	21·28	—	19·24	8·90	12·96	6·00
WINTER MAJETIN ROOTSTOCKS.						
5	15·90	—	14·35	6·09	9·70	4·60
COLE'S BLIGHTPROOF PARADISE ROOTSTOCKS.						
5	25·30	—	21·15	8·50	12·60	5·40
DUNN'S SEEDLING STEMPIECES.						
6	22·25	19·96	18·79	8·33	12·33	5·83
ROKEWOOD STEMPIECES.						
6	23·54	20·75	21·62	9·58	12·50	6·66
WINTER MAJETIN STEMPIECES.						
5	17·25	14·85	13·50	6·40	8·80	4·60
COLES BLIGHTPROOF PARADISE STEMPIECES.						
5	15·55	13·55	12·80	6·50	8·30	4·60
ROME BEAUTY STEMPIECES.						
6	23·92	22·58	21·25	9·75	14·66	6·00

From a perusal of these figures, and particularly when made in conjunction with a critical view of the trees in the plot, there would appear to be some evidence that the Winter Majetin rootstock has exercised a very restraining influence on the growth of the trees worked upon it both when used as a rootstock direct and when placed in the capacity of a stem-piece intermediate between a Northern Spy rootstock and a fruiting variety. It must be admitted that the surface soil in portion of the second row towards western end has an inferior appearance, but the comparative failure of nearly all of the fruiting varieties to make normal growth when in conjunction with this stock is not in the opinion of the writer wholly accounted for by this small differentiation in the soil conditions.

The Cole's Paradise on the other hand—as has been remarked earlier—permitted or encouraged a high average expansion in all parts of the trees of most of the kinds worked directly upon it. When, however, it was inserted between the Northern Spy rootstocks and the fruiting varieties, the position is very much reversed. For instance, the reduction represents upwards of 26 per cent. in girth of stock, 33 per cent. in the girth of tree stem, 26 per cent. in height, and 35 per cent. in mean spread, as compared with the same varieties worked direct on Northern Spy rootstocks.

Taking the average dimensions of the trees worked direct on Northern Spy rootstocks as a basis for comparison the intrusion of stem-pieces of neither the Dunn's Seedling, Rokewood, nor Rome Beauty varieties affected the development of the various parts of the superstructures of the trees to any appreciable degree whatever.

In so far as the increase in the average development of the trees grown on the Rome Beauty intermediate stem-pieces is concerned, the superior texture and suspected higher degree of fertility of the land in which they are planted most probably account for the greater proportion of the differences revealed in Table I. By way of comparison with the data presented in Table I. the average dimensions—calculated from the original individual measurements taken from all of the 82 trees of the fruiting varieties worked on all of the rootstocks and stem-pieces—were as follows:—

Girth of Rootstocks.	Girth of Stempieces.	Girth of Tree Trunks.	Mean Height of Trees.	Mean Spread of Trees.	Elevation of Mean Spread.
(Inches.)	(Inches.)	(Inches.)	(Feet.)	(Feet.)	(Feet.)
21·75	18·18	19·35	9·23	11·91	5·82

Although the sizes of the circles in the sketch plan indicate a very great diversity in the development of the individual trees of the different fruiting varieties when grown on all of these rootstocks and stem-pieces, still, the average dimensions respectively attained by these varieties coincide very closely with what, in this State at any rate, is widely accepted as characteristic of each sort. Esopus Spitzenburg, Baldwin, Shockley, Granny Smith, Statesman, and Tasma are all considered to be strong vigorous-growing varieties. Cleopatra is slightly less so and Jonathan is weaker still. These growth characteristics are practically borne out by the data given in Table II.

TABLE II.—*Showing the average dimensions reached by the different fruiting varieties when grown on all of the various rootstocks and stem-pieces used in these trials*:—

No. of Trees.	Variety.	Average Girth, Root-stocks.	Average Girth, Stem-pieces.	Average Girth, Tree Stems.	Average Height of Trees.	Average Spread of Trees.	Average Elevation of Spread of Trees.
		(Inches.)	(Inches.)	(Inches.)	(Feet.)	(Feet.)	(Feet.)
*7	Baldwin	21·71	16·50	19·32	9·14	13·57	6·14
15	Cleopatra ...	21·97	15·79	18·00	8·20	11·47	5·67
13	Cleopatra Q .	21·25	18·50	18·37	8·38	12·19	5·61
15	E. Spitzenburg	20·23	20·46	18·83	8·57	12·66	5·60
9	Jonathan ...	17·97	16·17	16·00	7·28	10·66	5·22
†3	Shockley ...	25·33	25·75	23·41	9·50	14·66	6·33
12	Granny Smith	24·65	24·19	21·66	11·50	12·17	6·00
4	Tasma	22·94	—	23·62	12·62	10·12	6·25
4	Statesman ..	24·19	21·12	22·94	12·37	8·62	6·00

* 15 trees until 1929 when 8 were top-grafted to Tasma and Statesman.

† 15 trees until 1927 when 12 were top-grafted to Granny Smith.

It would appear, therefore, that with the exceptions of the variations associated with Winter Majetin and Cole's Paradise, the various rootstocks and intermediate stem-pieces have exercised very little influence on the ultimate growth developments attained by the varieties of apple trees used in these trials as compared with those of the same kinds worked directly on to the Northern Spy, as is followed in ordinary commercial orchard practice in the apple growing States of the Commonwealth of Australia.

Further references will be made to the trees displaying these exceptions when the production of fruit and the occurrence therein of Bitter Pit are under consideration.

Fruit Production and the Occurrence of Bitter Pit.

References have previously been made to the generally accepted statement that this diseased condition is more prevalent in the fruit borne on young trees or on more matured trees which have been subjected to severe pruning applied during the dormant season of the year, or on normally healthy apple trees carrying what is deemed to represent a subnormal quantity of fruit. This may be summed up as representing those trees in which the vigour of vegetative activity finds expression in the rapid production of strong annual shoots bearing an abundance of leaf growth.

In tabulating the data of fruit production accumulated over periods of from 19 to 23 harvests from the various series of trees grown in these trials an attempt has been made to show to what extent the question of the prevalence of Bitter Pit in its fruit is bound up in the age of the apple tree.

For the information of those who desire to study this aspect of the trials, a series of tables numbered III. to XI. has been drawn up in which the total production of fruit of each variety when grown on each of the three rootstocks and five intermediate stem-pieces has been divided into three cropping periods.

The first period represents the earliest croppings collected from the trees from the inception of the bearing stage of each one up to 1917. This period must necessarily cover a variable term of years owing to the slightly different ages of the trees and the cropping characteristics peculiar to the respective varieties. The second period extends from 1918 to 1924—in the case of the trees on Northern Spy stocks and on intermediate stem-pieces of Dunn's Seedling and Rokewood. For those grafted on Winter Majetin and Cole's Paradise rootstocks, and those on stem-pieces of these two sorts, as well as those on intermediate stem-pieces of Rome Beauty—all stem-pieces being established on Northern Spy rootstocks—the second period extended from 1918 to 1927. This and the subsequent differences in the third period, arose owing to the first-named having been planted earlier, they had arrived at a stage of maturity in 1924 which the latter had only attained by 1927. The third period ranged from 1925 to 1934 in the case of those trees worked on the Northern Spy stock and on Dunn's and Rokewood stem-pieces established on Spy roots, and from 1927 to 1934 in respect to the varieties grown on Majetin and Cole's Paradise rootstocks and the stem-pieces of the Majetin, Paradise, and Rome Beauty. In all cases the calendar years quoted herein are inclusive, that is to say, the period 1927 to 1934 covers the crops harvested during eight years.

It should be mentioned here that the presentation of a more completely satisfactory comparison of the effects of the different rootstocks and stem combinations on the development of the trees and the occurrence of Bitter Pit in the fruits of all of the varieties included in the trials, has been rendered much more difficult owing to the repeated demands that the

revenue from this orchard should be made to approximate nearer to the expenditure in conducting the various operations therein.

This led to the writer reluctantly agreeing to the request of the orchard manager to be permitted to work over most of the trees of the two apparently more susceptible and least popular varieties, viz., Baldwin and Shockley, to more modern export kinds.

In 1927 Granny Smith, and two years later Tasma and Statesman, were top-grafted on to these sorts. Twelve trees of Shockley were thus reworked to Granny Smith, and eight trees of Baldwin being regrafted—four each to Tasma and Statesman. This proceeding removed from the records the possibilities of eight crops from Shockley and six from Baldwin at a time when both of those sorts may have reasonably been expected to produce their highest yields of apples containing the lowest percentages of Bitter Pit affected fruits.

Direct Rootstocks.

NORTHERN SPY.

Tables III. and IV. show the total yields harvested between 1912 and 1934 from six varieties grafted directly on to Northern Spy rootstocks, Cleopatra Q being for the meantime classed as a separate variety. In the cases of Shockley and Baldwin, breaks occur from 1927 and 1929 respectively, thus reducing the numbers of bearing trees recorded in Table III. In Table IV. the yields of only one tree of each of these six varieties grown on the Northern Spy rootstock are given without any break in the cropping data from 1912 to 1934—a period of 23 harvests. It will be noted that the tardy arrival at the cropping stage of the Baldwin variety is outstanding when grafted on this rootstock, but it also occurs when this variety is worked directly on to the Winter Majetin and Cole's Paradise rootstocks. The Jonathan also displayed a similar delay when grown on the Majetin stocks. This deferred cropping habit maintained by Baldwin throughout the first cropping period, 1912-1917, coincided with a prolonged period of vigorous shoot growth on the part of this variety.

The average annual crops borne during the second period, 1918-1924, by each of the seven trees of Baldwin as recorded in Table III. weighed 73lbs., and at the same time the annual average crop was 117lbs. from the single, but older, tree of that variety in Table IV. Singularly enough the percentages of Bitter Pit affected apples were 56.76 in each instance.

It is probable that this deferred fruiting habit in the Baldwin variety is largely the cause of its fruits displaying a greater percentage of Bitter Pit during the 1918-1924 period than those of any of the other varieties used in these trials.

In all of the other varieties, almost without exception, the second cropping period of seven years, viz., from 1918 to 1924, reveals a much higher percentage of Pit affected apples than was recorded during the first cropping period covering six years from 1912-1917, when the annual yields of fruit were still very limited in weight per tree.

The single trees of all the varieties recorded in Table IV. were planted in 1908, *whilst the other six*, which make up the seven recorded in Table III. worked on Northern Spy stocks, were planted in 1910. This increased age, combined with any advantage accruing to an outside or headland position, appears to be the only explanation of their greater average yield per tree during the second period as quoted above.

The figures of yields recorded during the third period, 1925-1934, cover the crops of 10 seasons. They indicate that the trees have settled down into what may be deemed the normal habit of fruiting characteristic of each variety. During this period the growth had slackened into the formation of short laterals and fruiting spurs, with insignificant terminal extensions on the framework limbs. It will be noted in Table III. that the annual yields per tree, other than in the cases of Baldwin and Shockley varieties, show increases averaging around 60 per cent. greater than found in the second period. On the other hand, the percentages of Bitter Pit affected apples have fallen to a very greater extent. In Table IV., where the fruit of only a single tree of each variety has been recorded over an unbroken period of 23 years, the trees of Baldwin and Shockley may be judged on even terms with those of the other sorts. In this table the increased yield per tree during the third period ranges from 39.14 in Cleopatra Q to 70.56 per cent. in Shockley. This average increase, however, is 54.20 per cent., and singularly this drop was due to Cleopatra fruits showing only 55.74 per cent. and Cleopatra Q 39.14 per cent. increases. It will be noted also that the percentages of apples affected by Bitter Pit was very low in all varieties during the third period.

Attention is drawn to the fact that where the produce of a greater number of trees (36) over the period is shown, as in Table III., the percentages of Bitter Pit affected apples are higher than in Table IV., carrying only six or a single tree of each sort. This position evidently would have been less pronounced had the crops from the full number of trees of Shockley and Baldwin been recorded during the last eight and six years respectively. In this respect it will be found that by omitting the data obtained from the Baldwin and Shockley varieties from Tables III. and IV., thus reducing the number of trees in Table III. to 22 and covering four sorts, the total yield for 23 cropping seasons equals 51,579lbs., of which 9,013lbs. were affected by Bitter Pit, or an equivalent of 17.47 per cent., in lieu of 20.60 per cent. as finally set out in detail in Table XII. The omission of the fruits of these two varieties from Table IV. leaves a total of 9,723lbs. of apples, of which 1,006lbs. were "pitted." This represents 10.35 per cent. as compared with 13.03 per cent. when this fruit has been included for the full term of 23 years, over which it was recorded in Table IV.

Calculating from the time of planting the trees it would appear that there is in this plot definite evidence that, under similar environmental conditions in the case of the varieties tested on Northern Spy rootstocks, the Bitter Pit is likely to reach the zenith of its virulence, or, in other words, the apple grower may expect to suffer the greatest losses of fruit from Bitter Pit injuries during the first 16 years of the plantation's existence. This would seem to be irrespective of whether the trees begin to crop slightly at the fourth or fifth year after being planted in the orchard or whether fruition be delayed to a later period, providing, always, that average good vigour of vegetation be maintained in them.

The similarity of the figures of yield in the first fruiting periods in Tables III. and IV. indicate that the small yields quoted have all been recorded from the single trees of each variety contained in Table IV.

As only a single tree of Jonathan was grown direct on Northern Spy rootstock, the data from that was included in both Tables III. and IV. This has no significance further than to indicate that in all cases the data in Table III. also includes that contained in Table IV.

Winter Majetin.

In comparing the yields from the single tree of each variety worked on Winter Majetin rootstocks and the percentages of apples therein found affected by Bitter Pit, as set out in Table V., with those in Table IV. on Northern Spy stocks, it will be noted that whilst, with the exception of Cleopatra variety, the total crops have weighed much less in the aggregate, the percentage of Bitter Pit affected apples was slightly higher, viz., 14.80 per cent. Majetin as against 13.03 per cent. from the trees on Spy rootstocks. This difference is not at all convincing and might disappear when repeated on a greater number of trees. When viewed from the apple grower's standpoint, however, this slight difference of loss from Bitter Pit is overshadowed by the greatly reduced yields harvested from the trees grown on the Majetin rootstock. If these differences in weight of total yields are borne out in larger scale tests, the *complete disappearance of Bitter Pit* from the crops borne by trees on Majetin roots could not compensate for the disparity between the weights of sound fruit apparently obtainable from these varieties when grown on the Northern Spy rootstocks.

In the figures obtained from the trees growing on Winter Majetin stocks set out in Table V., it will be seen that for the last seven cropping seasons no data was entered for the Shockley variety. If the produce from this variety be wholly omitted, and the test confined to the produce of the remaining five sorts, the percentage of Bitter Pit affected fruit would only recede 18 per cent. Allusion has been made to the restricting action exercised or seemingly exercised by the Winter Majetin stock and stem-piece on the subsequent growth of the varieties of apple tree grown upon it. If this proves to be a consistent feature, it certainly has given no evidence thus far that it has noticeably increased fruit production during either of the earlier periods, as is the wont of dwarfing stocks used on other kinds of fruit trees.

Cole's Blight-proof Paradise.

In Table VI. the records of the total crops produced by a single tree of each of the six fruiting varieties when grown on Cole's Paradise rootstocks are set forth in three cropping periods. When compared with the crops recorded from the same number of trees of these varieties grown on Northern Spy and Winter Majetin rootstocks, *vide* Tables IV. and V., it will be seen that they stand about midway between the yields of those on the above-named rootstocks. The percentage of apples affected by Bitter Pit, viz., 17.26 per cent., is somewhat higher than found in the gross yield from the same number of trees on either of the other kinds of stocks. If, with an increased number of trees this percentage was found to rise—as has been the case in these trials with the trees on Northern Spy rootstock—*vide* the summary set out in Table XII.—or if the percentage of diseased apples merely remained stationary when a greater number of units of each variety were grown, then one would, in the writer's opinion, be j stified in stating at this stage that the use of neither of these two last-named rootstocks in preference to the Northern Spy could be recommended as a means of reducing the losses from Bitter Pit in our orchards.

Intermediate Stem-pieces on Northern Spy Roots.

Tables VII. and VIII., contain the fruiting data recorded from similar varieties of apple trees stem-grafted on to the intermediate growths of Dunn's Seedling and Rokewood respectively. There is one tree of each of

the six varieties worked on each of the above stem-pieces. The unbroken fruiting records of these trees is shown in three periods extending in all cases from 1912 to 1934—23 fruit crops.

The outstanding influence of the use of the intermediate stem-piece is seen here in the consistent earlier formation of the fruiting habit by those varieties which, when placed directly on Northern Spy, Winter Majetin, or Cole's Paradise, showed tardiness in that respect. Here again in most instances we find the repetition of an increased percentage of Bitter Pit affected apples during the middle period of cropping, i.e., in the seven crops harvested between 1918 and 1924, followed by a great shrinkage of the percentage of waste due to this disease during the ten crops gathered between 1925 and 1934. The different varieties continued to maintain those positions relative to the comparative susceptibility of their fruits to Bitter Pit, which they had established when grown directly on the three previously described blight-proof rootstocks. In this respect, with the exception of those of the Jonathan and Shockley varieties, the percentages of Bitter Pit affected apples were lower than was recorded from the six trees worked directly on Northern Spy, which grew in regular alternations with them throughout the first row in the plot. With the exceptions of Cleopatra Q and Shockley, the trees on the Rokewood stem-pieces showed slightly lower percentages of Bitter Pit than did those on the Dunn's Seedling stem-pieces. In respect to the comparative total yields of these trees, viz., six direct on Northern Spy stocks and similar numbers on Dunn's Seedling and Rokewood stem-pieces respectively, those on the Spy roots produced an average annual yield per tree of 100.54lbs., those on Dunn's intermediate stem-pieces 87,96lbs., and those on Rokewood stem-pieces, 108.45lbs. over the 23 crops. It has been previously pointed out that the total yield of apples from the six trees grown direct on Northern Spy, planted in the first row with Dunn's and Rokewood weighed 13,875lbs., of which 1,808lbs. or 13.03 per cent. were affected by Bitter Pit. Similar numbers of the same varieties on the Dunn's and Rokewood stem-pieces produced 13,139lbs. and 14,966lbs. respectively. Of these quantities 1,347lbs. or 11.09 per cent. on Dunn's and 1,789lbs. or 11.95 per cent. on Rokewood stem-pieces were destroyed by Bitter Pit. These figures indicate that the six trees on Dunn's Seedling stem-pieces produced 1,275lbs. less and that those on Rokewood stem-pieces yielded 1,110lbs. more clean fruit than did a like number of trees grown direct on Northern Spy rootstocks throughout the 23 years of cropping. This increase equals an annual averave of 48.26lbs. of non-pitted apples or 8.04lbs. per tree more from those on Rokewood stem-pieces than from those growing direct on Spy stocks.

In Tables IX. and X. the fruiting records from the trees on intermediate stem-pieces of Cole's Paradise and Winter Majetin respectively are quoted in three periods. The first covers four crops from 1914 to 1917, the second, from 1918 to 1927, equalling 10 crops, and the third, from 1928 to 1934, covering seven harvests.

The percentage of diseased fruits from the trees on Cole's Paradise stem-pieces varied slightly from the order of susceptibility hitherto indicated as peculiar to the different varieties. The apples from the reputedly most susceptible, viz., Baldwin and Shockley, were still easily the most affected by Bitter Pit. Although Esopus Spitzenburg and the Jonathan exchanged positions the reduced quantity of infected fruits from the former was much more marked than the rise of diseased specimens in the latter, which has hitherto consistently shown greater immunity from Bitter Pit than any other variety used in the trials. The marked feature attached to the trees

on the Cole's Paradise stem-piece is their much reduced yields of apples compared with the crops from the same sorts grown direct on Northern Spy rootstocks or where the Dunn's and Rokewood stem-pieces have been inserted between them and the Spy root system. It will be recalled that the Paradise stem-pieces also restrained the development of stems and branches of the trees into which they had been intergrafted.

This may be readily detected from the sketch plan showing the mean spread of the top of each of the trees grown on this variety of stem-piece.

The total fruits recorded in Table X. from the trees grown on Winter Majetin stem-pieces show a slightly greater decline in the gross quantity than that from the trees on the Paradise stem-pieces. This, however, was probably due to the lesser number of crops carried as set out in Table XVI. They illustrate the rise to the maximum of injury from Bitter Pit during the second fruiting period covering ten harvests from 1918 to 1927 and a rapid fall during the final seven crops, 1928 to 1934. The percentage of loss in the respective varieties, though somewhat increased in most instances, has not seriously disturbed the order of susceptibility hitherto attributable to them when grown on the other rootstocks and stem-pieces.

In Table XI. the data collected from the two trees of each five varieties grown on the Rome Beauty intermediate stem-pieces worked on Northern Spy roots are also set out in three cropping stages. The first of these covers only three crops, 1915 to 1917, the second from 1918 to 1927 taking in 10 harvests, and the third period from 1928 to 1934 includes the returns from seven fruit seasons. The fruits of these varieties still displayed the same comparative order of susceptibility to the disease as when grown on the other rootstocks and stem-piece combinations.

The figures quoted in Table XII. giving the summarised total yields gathered from all varieties grown on each kind of rootstock and stem-piece included in these trials indicate that the second highest average yield of fruit per tree per annum collected from the intermediate stem-pieces was obtained from this combination over their full cropping period. This was achieved notwithstanding that two trees of each of the two heavier bearing varieties, viz., Shockley and Baldwin, were top-grafted and consequently out of action for their latest and presumably their most prolific eight and six crops respectively.

The percentage of apples affected by Bitter Pit from the trees on the Rome Beauty stem-pieces was, however, fairly high, being 16.27 per cent. as compared with the general record of 17.38 per cent. of diseased fruit collected from the total yields of the whole series of tests as set out in the same table, although this percentage of Bitter Pit is appreciably less than that found in the 24 to 36 trees, worked directly on Northern Spy rootstock. When calculated on an annual return per tree from a more nearly comparable number of crops from the same varieties on the Spy stocks—as set out in Table IV.—this seeming advantage disappears. To illustrate this further, when the necessary deductions of crops from the two trees of Shockley top-grafted over in 1927, and the two trees of Baldwin top-worked in 1929 are taken from the original 10 trees growing on the Rome Beauty stem-pieces, the returns represent the equivalent of 162 individual tree yields throughout the cropping period of 20 harvests from 1915 to 1934 inclusive. In the detailed results from the six trees as contained in Table IV. on the Spy stocks there were 23 harvests from 1912 to 1934, or an equivalent of 138 tree yields. Calculated on this basis the average annual yield per tree from those on Rome Beauty stem-pieces has been 105.36lbs. and from the trees grown on Northern Spy *direct 100.54lbs.* In these quantities the respective weights of apples annually recorded as being

free from Bitter Pit have averaged 87.04lbs. for each tree grown direct on Northern Spy stocks and 84.56lbs. for each of those developed on the Rome Beauty intermediate stem-pieces.

The withdrawal of the 12 trees of Shockley for the presumably most productive eight crops and of six crops of a similar nature from eight trees of Baldwin, have, it must be admitted, interfered to an uncertain degree in the returns recorded in the trials made with all of the rootstocks and stem-piece combinations other than those contained in Tables IV., VII., and VIII.

Estimations based on the average returns recorded of Bitter Pit affected and sound apples during these periods from the trees of these two varieties as set out in Tables IV., VII., and VIII., do not indicate much variation away from the percentages of diseased fruit as set out in the final Tables, XIII. and XIV. It would appear, therefore, that without wholly discarding the data obtained from these two varieties in all tables other than the three mentioned above, it may be assumed that, whilst the aggregate yields of the remaining tests have undoubtedly suffered an unknown reduction it is possible the comparative percentages of fruit affected by Bitter Pit in the various trials would not have undergone much change from that reduction.

In conclusion it may be pointed out that from 48 of the original varieties of trees grown on the direct rootstocks 78,857lbs. of apples were harvested between 1912 and 1934. Of these 19.76 per cent. were destroyed by Bitter Pit. From the 34 similar varieties of trees grown on the five different intermediate stem-pieces 53,203lbs. were recorded, of which 13.86 per cent. were affected by that disease.

The data contained in Table XV. shows the total yields and percentages of apples affected by Bitter Pit borne by the Granny Smith, Tasma (Democrat), and Statesman varieties which were top-grafted on the Shockley and Baldwin varieties in 1927 and 1929 respectively. As hereinbefore explained, the first-named variety was top-grafted on to the main arms of mature trees of Shockley which were grown on each of the various rootstocks and stem-pieces and of the two last-named sorts on similarly mature trees of Baldwin, some of which grew on Northern Spy rootstocks direct, and of the last-named (Statesman) two trees had been developed on Rome Beauty stem-pieces above the Northern Spy rootstocks. In the case of the 12 trees of Granny Smith the figures represent the six-year cropping period extending from 1929 to 1934, and in respect to the Tasma and Statesman, only two crops, viz., 1933 and 1934, are represented. These trees have all made very excellent growth, but those top-grafted on trees growing on both the Winter Majetin root system direct and on the intermediate stem-pieces of that variety on Spy roots, have borne indifferently. The percentage of fruit affected by Bitter Pit, however, though comparable are generally somewhat lower than those yielded by the other varieties during their third or more matured periods of cropping. This coincides very closely with the general observations made respecting the comparative susceptibility to the disease displayed by these three varieties of apple when grown in commercial orchards in this State.

The rapid settling into the bearing habit—notwithstanding the very strong growth made during the first two or three seasons after being grafted—would seem to offer some indication that the matured condition of

the roots and intervening stems, and main limbs of which the various frame structures have been composed, may have exercised some degree of restraint on the occurrence of the Bitter Pit defect in the fruits.

The Susceptibility of the Fruiting Varieties to Bitter Pit.

References have been made to the apparent differences in the degree of resistence displayed by the fruits of the original fruiting varieties used in these trials. The data collected between 1912 and 1934 from these trees enables one to compare with confidence three varieties and one sub-variety, viz., Cleopatra, Cleopatra Q, Esopus Spitzenburg, and Jonathan, and with a slight reservation, Baldwin and Shockley varieties also. Had all of the trees of these two latter sorts been retained through the latest six and eight crops respectively, their positions may have been modified.

From the figures available a small table (XVI.) has been produced in which the comparative susceptibilities of these varieties to Bitter Pit when grown on all of the rootstocks and stem-piece combinations, is stated in terms of percentages by weight of the Bitter Pit affected apples. The calculations have been worked out on the basis of the varying numbers of 'cropping years'' recorded for each variety grown on the various rootstocks and stem-pieces. These variations have chiefly been due to the varying ages of the trees on certain of the stocks, also to the top-grafting of two of the varieties (Baldwin and Shockley) several years before the last year (1934) dealt with in this report. In some isolated seasons odd trees failed to crop. As these trees were not consistently confined to any particular portion of the plot, nor to any variety or rootstock more than to the others, the cause or causes of these intermittent crop failures cannot be explained.

TABLE XVI.—*Showing the Comparative Susceptibility of the different Scion Varieties to Bitter Pit Disease.*

Variety.	No. Tree Crops from all Stocks.	Average Weight of each Crop.	Total Yield	Affected by Bitter Pit.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
Baldwin	222	75 1½	16,671 8	5,686 3	34·11
Cleopatra	281	130 3¼	36,586 11	6,079 1	16·59
Cleopatra Q	252	128 10	32,411 5	5,776 8	17·82
Esopus Spitzenburg	291	69 8½	20,233 0	1,684 12	8·33
Jonathan	190	66 5	12,596 7	415 5	3·30
Shockley	196	69 3	13,561 9	3,329 0	24·55

SUMMARY AND DISCUSSION.

Since 1908 a series of trials have been carried out with apple trees in the State Experiment Orchard at Blackwood, South Australia, using three varieties of rootstocks and five intermediate stem-pieces. The latter, with the exceptions of two trees, were all developed on Northern Spy roots, which is the rootstock universally adopted in the commercial propagation of apple trees in Australasia. The former were propagated on their own respective roots. The objects sought in these trials were:—

(1) To ascertain if possible whether the use of the Northern Spy variety as a rootstock—the fruits of which are highly susceptible to the Bitter

Pit disease—exercised an undesirable influence in the direction of accentuating the occurrence of the disease in the fruits of the other susceptible varieties of apple worked directly upon it, and

(2) Conversely to note whether the use of two other varieties as direct rootstocks—the fruits of which are reputedly resistant to Bitter Pit—would impart some of such powers of resistance to the fruit of more susceptible commercial varieties grown upon them.

(3) Following a similar line of reasoning (*a posteriori*) to note if the interposition of a piece of growth taken from a variety producing apples rarely affected by Bitter Pit intermediate between the Northern Spy rootstock and the fruiting variety, the prevalence of Bitter Pit in the fruits of the latter would be abated.

(4) In pursuance of these objectives the varieties used as direct rootstocks were:—

Northern Spy,

Winter Majetin,

Cole's Paradise.

All of these are accepted in Australia as possessing "Blight proof" qualities in so far as the Woolly Aphis (*Eriosoma lanigera*, Haus.) is concerned.

The intermediate stem-pieces were taken from Dunn's Seedling, Rokewood, and Rome Beauty—all commercial varieties displaying considerable resistance to Bitter Pit. Winter Majetin and Cole's Paradise were likewise utilised because they are practically immune from Woolly Blight injuries and their fruits are also reputedly highly resistant to the Bitter Pit.

(5) The fruiting varieties selected for testing on the foregoing rootstocks and stem-pieces were Baldwin, Cleopatra (syn. Ortley of U.S.A.), Cleopatra Q, Esopus Spitzenburg, Jonathan, and Shockley. Of these, Baldwin, Cleopatra, Shockley, and Spitzenburg were all, by general opinion, considered at the time of commencing the trials to be highly susceptible to Bitter Pit. The subvariety Cleopatra Q had not up till that time been known to have borne any fruits affected by that disease, whilst Jonathan was regarded as capable of resisting it to a very high degree. In consequence of this reputation the last-named variety was used in more limited numbers on the various rootstocks and stem-pieces.

(6) There were 7 trees of each of 5 varieties and 1 tree of Jonathan = 36 trees in all, worked and grown direct on Northern Spy rootstocks from 1908 until 1927. During 1929 and 1930, 30 trees, and from 1930-34, 24 still remained in the trials. On Winter Majetin rootstocks from 1910 to 1927, 6 trees—one of each variety—was grown, and from 1928-34, 5 remained intact. On Cole's Paradise rootstocks similar numbers of trees were grown over the same periods as those on the Winter Majetin stocks. The Dunn's Seedling and Rokewood stem-pieces worked on Northern Spy rootstocks each carried 6 trees—1 of each variety—from 1908 to 1934. The Winter Majetin and Cole's Paradise stem-pieces on Northern Spy roots each carried 6 trees, *i.e.*, one of each of the fruiting varieties, from 1911 to 1927, and 5 trees only from 1928 to 1934. The Rome Beauty stem-pieces

on Northern Spy rootstocks consisted of 10 trees = 2 each of 5 varieties (Cleopatra Q being omitted), from 1912 to 1927, and 6 trees = 2 of each of 3 fruiting varieties from 1921-34.

(7) In endeavouring to gauge the varying influences exercised by the different rootstocks and stem-pieces on the development of the trees of the fruiting varieties worked on them, the growths exhibited by these trees when grown directly on the Northern Spy rootstocks have been adopted as a standard for comparison.

(8) Measurements of the girth of rootstock, stem-piece (wherever it was used), and of the tree trunk, together with the mean height and spread of the branch system of each tree grown in the trials, have been collected and an average struck from the figures taken from each. These figures indicate that the use of the Winter Majetin as a direct rootstock consistently reduced every growth dimension of the fruiting variety worked upon it. The Cole's Paradise, on the other hand, has increased the dimensions of the stock and stem, and in general has caused the fruiting variety to stand on even terms in both height and spread with those grown on the Northern Spy stocks.

The intermediate stem-pieces of Dunn's Seedling, Rokewood and Rome Beauty have each enabled or permitted the fruiting varieties worked upon them to attain growth dimensions equal in every respect to their fellows grown on the Northern Spy rootstocks direct.

The stem-pieces of Cole's Paradise and of the Winter Majetin have very appreciably restrained the development of the fruiting varieties in every dimension of stem or limb growth obtained from them.

(9) The data relative to the total fruit production and the percentages of apples affected by Bitter Pit contained therein have been collected from each tree grown in the trials. These data extend over periods ranging from 19 to 23 harvests according to the variations in the ages of the trees in the different trials.

The crop yields from each trial have been presented in tabulated form representing three cropping periods. The first period covers those years when the young vigorous growing trees are entering the cropping stage but producing only a limited number of fruits which are usually of a large, soft, sappy texture. In the second, whilst the quantities of apples are steadily increasing in volume, they are still somewhat lacking in firmness of texture, but definitely improving in that particular as the vigour of shoot-growth is slowly diminishing. The third period is one of fuller crop production, though somewhat alternating owing to the trees settling into that habit as their growth is represented by a considerable slackening in the annual extensions of leaders and laterals wherever the trees are not sharply headed in by winter pruning practices. In other words, the trees have arrived at the stage of normal crop production characteristic of each variety.

The data collected indicates that on trees of normal vigour and largely irrespective of the rootstocks or fruiting varieties concerned the first and second periods cover the years during which the percentages of Bitter Pit

affected apples are recorded in increasing numbers. From all of the varieties used in these trials, and on nearly all of the rootstocks and stem-piece combinations the greatest losses from this disease have occurred during the second period, culminating approximately 16 years from the date of planting.

During the third or mature period of tree growth the percentages of diseased apples rapidly declined. The data in Table XII. shows that the 36 trees originally set out on Northern Spy rootstocks were gradually reduced to 24 trees owing to the topgrafting of the others to certain commercial varieties in 1927 and 1929. Between 1912 and 1934 the equivalent of 564 single tree crops were taken from them, representing a total weight of 63,414lbs., of which 13,060lbs. were lost through Bitter Pit. This is equal to 20.60 per cent., or approximately 1lb. to each 4.85lbs. of apples. When compared with the percentages of diseased apples obtained from trees on each of the other rootstocks and stem-piece combinations these figures place the Northern Spy rootstock in an unfavourable perspective. When, however, the data from trees on this stock is drawn from similar numbers of trees of the fruiting varieties, as were used on all the other stocks and stem-pieces, this suspected disadvantage largely disappears.

Calculated from 6 trees on the Spy rootstock and embracing the equivalent of 138 single tree crops between 1912 and 1934, the yield is proportionately increased and the quantity of Bitter Pit affected apples reduced to 13.03 per cent., which is less than that recorded from any of the others excepting from those grown on Dunn's Seedling and Rokewood intermediate stem-pieces. The trees on these two last-named combinations when grown in regular replications and in similar soil in the top row seen in the sketch plan, show a cropping capacity approximately equal to those grown directly on the Spy rootstocks. The 36 trees on Spy rootstocks are distributed throughout four rows in the plot, which embrace all of the direct rootstocks and stem-pieces other than those in the Rome Beauty combination which, as formerly remarked, occupies the richest soil as contained in the fifth and lower outside row.

The percentage of Bitter Pit apples taken from the grand total yielded by all of the varieties consisting of 82 trees, as originally set out in the plot on all of the rootstocks and combinations, was 19.69 per cent. When the produce from the lower outside row carrying the Rome Beauty stem-pieces is omitted, the percentage of diseased fruit rose to 20.28 per cent. from 72 trees.

From the evidence adduced the writer is not disposed to condemn the Northern Spy rootstock as being directly responsible for the losses caused by Bitter Pit disease, as recorded in the fruits of the varieties grown upon it. Its substitution by either the Winter Majetin or Cole's Paradise, in his opinion, received insufficient support from the data presented herein. Whilst neither of the two last-named may, if tested on an increased number of trees approximating to that used of Northern Spy stocks in these trials, increase the number of Bitter Pit affected apples from about 1 in 7.67 to 1 in 4.85 as has been the case with the Spy stocks in this plot, there has a consistent indication shown herein of another fatal objection to their adoption either as direct rootstocks or as intermediate stem-pieces. that the paucity of cropping generally displayed by the varieties

worked on them when compared with the same sorts grown on Northern Spy stocks direct or on the other kinds or stem-pieces placed upon the Spy rootstocks, would not warrant the use of either of them even if they conferred complete immunity from Bitter Pit upon the fruits of the varieties grafted upon them. In other words, these trials show that, at any rate under conditions of soil and climate such as prevail in the State Orchard at Blackwood in South Australia, the commercial varieties of apple-trees grown on Northern Spy rootstocks or on Dunn's Seedling, Rokewood, or Rome Beauty stem-pieces superimposed upon Northern Spy roots, consistently produced crops, which, after the whole of the Bitter Pit affected apples were eliminated, surpassed in quantity and value the total yields of the same varieties grown on Winter Majetin, or Cole's Paradise rootstocks or stem-pieces.

(10) Although not considered as part of the investigation as outlined herein, the comparative susceptibilities to Bitter Pit of the fruiting varieties used in the trials have been defined from the data, as collected in this plot, over cropping periods extending from 19 to 23 consecutive years. These degrees of susceptibility have been set out in the percentages of Bitter Pit affected fruits recorded from the total produce of each variety grown on all rootstocks and stem-pieces. They are as follows:—Jonathan 3.30 per cent., Esopus Spitzenburg 8.33 per cent., Cleopatra 16.59 per cent., Cleopatra Q (sub-variety) 17.82 per cent., Shockley 24.55 per cent., and Baldwin 33.41 per cent.

(11) The time allotted for the compilation of this portion of the report has not permitted an examination to be made of the percentages of Bitter Pit affected apples contained in each separate grade or size of the fruit which has been recorded from each of the trees grown on the various rootstocks or stem-pieces. Neither has it afforded an opportunity of comparing the varying incidence of the disease with the records of temperatures and rainfall experienced during the growth of the apples throughout the lengthy period of years during which these data have been collected.

The writer regrets, owing to the recent application of an earlier retiring age limit to the S.A. Public Service, he will be unable to pursue this report further. This is accentuated more particularly as the data collected in connection with such long distance experiments conducted in the Blackwood State Orchard in respect to the reactions of fruit trees to applications of fertilisers, forms of tillage, and methods of pruning also contain much which may prove to have an important and direct bearing on the prevalence of Bitter Pit in the apple.

With this contribution the writer terminates his active connection with the Department of Agriculture and the Blackwood Experiment Orchard, which he initiated in 1908. He desires to express his great appreciation of the much valued assistance rendered by the Orchard Manager (Mr. R. Fowler) and his staff, to Mr. E. W. Pritchard (Agricultural Botanist) for photographic studies, to Mr. P. D. Jeffery for preparing plans, and to Mr. P. F. Supple and Miss Amanda Russell, of the office of the Horticultural Branch, for clerical aid so willingly given. Without such combined assistance the compilation of these portions of the report could not have been undertaken.

TABLE III.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by seven trees of each of five Varieties and three of a Sixth (Jonathan) during Stated Periods in the Development of the Trees.*

ALL TREES WERE GRAFTED ON NORTHERN SPY ROOTSTOCKS.

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per Cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1912-17	1	—	—	—	—
1918-24	7	1,546 9	2,028 15	3,575 8	56·75
1925-28	7 }	3,119 0	506 12	3,625 12	13·98
1929-34	1 }				
Total	—	4,665 9	2,535 11	7,201 4	35·21
		CLEOPATRA.			
1912-17	7	27 0	9 2	36 2	25·26
1918-24	7	4,242 4	1,892 7	6,134 11	30·84
1925-34	7	13,630 0	2,022 8	15,652 8	12·92
Total	—	17,899 4	3,924 1	21,823 5	17·98
		CLEOPATRA Q.			
1912-17	7	136 12	40 11	177 7	22·93
1918-24	7	3,692 5	2,069 9	5,761 14	35·92
1925-34	7	11,687 4	2,160 4	13,847 8	15·60
Total	—	15,516 5	4,270 8	19,786 13	21·58
		ESOPUS SPITZENBURG.			
1912-17	7	8 9	1 2	9 11	11·61
1918-24	7	1,794 2	578 15	2,373 1	21·87
1925-34	7	5,574 0	171 8	5,745 8	2·98
Total	—	7,376 11	751 9	8,128 4	9·25
		JONATHAN.			
1912-17	1	108 9	4 0	112 9	3·55
1918-24	1	440 5	49 12	490 1	10·15
1925-34	1	1,224 12	13 4	1,238 0	1·07
Total	—	1,773 10	67 0	1,840 10	3·64
		SHOCKLEY.			
[illegible]	1	24 10	8 2	32 12	24·81
[illegible]	7	1,342 12	1,433 10	2,776 6	51·64
[illegible]	7 }	1,755 0	69 12	1,824 12	3·82
[illegible]	1 }				
Total	—	3,122 6	1,511 8	4,633 14	32·62

TABLE IV.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by One Tree of each of Six Varieties during Stated Periods in the Development of the trees.*

ALL TREES WERE GRAFTED ON NORTHERN SPY ROOTSTOCKS.

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1912-17	1	—	—	—	—
1918-24	1	355 0	465 9	820 9	56·74
1925-34	1	1,731 0	150 4	1,881 4	7.99
Total	—	2,086 0	615 13	2,701 13	22·79
		CLEOPATRA.			
1912-17	1	27 0	9 2	36 2	25·26
1918-24	1	596 15	125 4	722 3	17·34
1925-34	1	1,565 4	66 12	1,632 0	4·09
Total	—	2,189 3	201 2	2,390 5	8·41
		CLEOPATRA Q.			
1912-17	1	136 12	40 11	177 7	22·93
1918-24	1	1,111 9	449 4	1,560 13	28·78
1925-34	1	2,472 0	92 12	2,564 12	3·62
Total	—	3,720 5	582 11	4,303 0	13·54
		ESOPUS SPITZENBURG.			
1912-17	1	8 9	1 2	9 11	11·61
1918-24	1	334 8	118 5	452 13	26·12
1925-34	1	1,073 12	46 12	1,120 8	4·17
Total	—	1,416 13	166 3	1,583 0	10·50
		JONATHAN.			
1912-17	1	108 9	4 0	112 9	3·55
1918-24	1	440 5	49 12	490 1	10·15
1925-34	1	1,224 12	13 4	1,238 0	1·07
Total	—	1,773 10	67 0	1,840 10	3·64
		SHOCKLEY.			
1912-17	1	24 10	8 2	32 12	24·81
1918-24	1	188 10	140 8	329 2	42·69
1925-34	1	1,081 0	37 4	1,118 4	3·33
Total		1,294 4	185 14	1,480 2	12·54

TABLE V.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by One tree of each of Six Varieties during Stated Periods in the Development of the Trees.*

ALL TREES ARE GRAFTED ON WINTER MAJETIN ROOTSTOCKS.

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1914-17	1	—	—	—	—
1918-27	1	24 4	38 12	63 0	61·51
1928-34	1	662 8	252 4	914 12	31·80
Total	—	686 12	291 0	977 12	29·76
		CLEOPATRA.			
1914-17	1	5 1	0 9	5 10	10·00
1918-27	1	663 1	158 1	821 2	19·25
1928-34	1	877 4	91 12	969 0	9·47
Total	—	1,545 6	250 6	1,795 12	13·94
		CLEOPATRA Q.			
1914-17	1	6 12	—	6 12	—
1918-27	1	548 7	175 13	724 4	24·28
1928-34	1	905 8	56 12	962 4	5·90
Total	—	1,460 11	232 9	1,693 4	13·73
		ESOPUS SPITZENBURG.			
1914-17	1	2 6	0 10	3 0	20·83
1918-27	1	105 4	27 2	132 6	20·50
1928-34	1	309 0	6 4	315 4	1·98
Total............	—	416 10	34 0	450 10	7·55
		JONATHAN.			
1914-17	1	—	—	—	—
1918-27	1	284 15	19 6	304 5	6·37
1928-34	1	440 4	1 0	441 4	0·23
Total	—	725 3	20 6	745 9	2·73
		SHOCKLEY.			
1914-17	1	1 13	0 13	2 10	30·95
1918-26	*1	109 3	29 5	139 2	21·07
Total	—	111 0	30 2	141 12	21·25

* Top-grafted to Granny Smith 1927.

TABLE VI.—*Showing the Total Yields and Percentages of Apples affected by Bitter Pit borne by one Tree of each of six Varieties during Stated Periods in the Development of the Trees.*

ALL TREES GRAFTED ON COLE'S PARADISE ROOTSTOCKS.

Cropping Period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1914-17	1	—	—	—	—
1918-27	1	591 8	405 2	996 10	40·65
1928-34	1	1,430 0	340 12	1,770 12	19·24
Total	—	2,021 8	745 14	2,767 6	26·95
		CLEOPATRA.			
1914-17	1	1 5	—	1 5	—
1918-27	1	613 15	111 12	725 11	15·40
1928-34	1	928 12	127 8	1,056 4	12·07
Total	—	1,544 0	239 4	1,783 4	13·42
		CLEOPATRA Q.			
1914-17	1	14 8	3 10	18 2	20·00
1918-27	1	514 15	298 6	813 5	36·69
1928-34	1	1,137 12	49 4	1,187 0	4·15
Total	—	1,667 3	351 4	2,018 7	17·40
		ESOPUS SPITZENBURG.			
1914-17	1	1 13	—	1 13	—
1918-27	1	359 13	67 6	427 3	15·77
1928-34	1	627 12	20 12	648 8	3·20
Total	—	989 6	88 2	1,077 8	8·18
		JONATHAN.			
1914-17	1	18 0	0 8	18 8	2·70
1918-27	1	459 0	37 0	496 0	7·46
1928-34	1	834 0	8 4	842 4	0·98
Total	—	1,311 0	45 12	1,356 12	3·37
		SHOCKLEY.			
1914-17	1	3 9	1 15	5 8	35·23
1918-26	*1	431 14	197 9	629 7	31·39
Total	—	435 7	199 8	634 15	31·42

* Top-grafted to Granny Smith, 1927.

TABLE VII.—*Showing the Total Yields and Percentages of Apples affected by Bitter Pit borne by One Tree of each of Six Varieties during stated periods in the Development of the Trees when worked on—*

INTERMEDIATE STEMPIECES OF DUNN'S SEEDLING GROWN ON NORTHERN SPY ROOTSTOCKS.

Cropping Period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1912-17	1	13 3	6 3	19 6	31·93
1918-24	1	125 12	140 13	266 9	52·83
1925-34	1	123 12	90 0	213 12	42·11
Total		262 11	237 0	499 11	47·43
		CLEOPATRA.			
1912-17	1	72 2	8 1	80 3	10·05
1918-24	1	658 9	83 8	742 1	11·25
1925-34	1	1,209 12	36 4	1,246 0	2·91
Total		1,940 7	127 13	2,068 4	6·18
		CLEOPATRA Q.			
1912-17	1	32 13	8 7	41 4	20·45
1918-24	1	813 5	209 15	1,023 4	20·52
1925-34	1	1,667 4	53 12	1,721 0	3·12
Total		2,513 6	272 2	2,785 8	9·77
		ESOPUS SPITZENBURG.			
1912-17	1	65 0	5 7	70 7	7·72
1918-24	1	749 1	191 0	940 1	20·32
1925-34	1	1,270 4	24 4	1,294 8	1·87
Total		2,084 5	220 11	2,305 0	9·57
		JONATHAN.			
1912-17	1	73 3	4 4	77 7	5·24
1918-24	1	355 4	53 0	408 4	12·98
1925-34	1	1,031 8	10 8	1,042 0	1·00
Total		1,459 15	67 12	1,527 11	4·43
		SHOCKLEY.			
1912-17	1	153 12	24 14	178 10	13·92
1918-24	1	425 5	302 14	728 3	41·59
1925-34	1	1,952 8	93 8	2,046 0	4·57
Total		2,531 9	421 4	2,952 13	14·27

TABLE VIII.—*Showing the Total Yields and Percentages of Apples affected by Bitter Pit, borne by One Tree of each of Six Varieties during stated periods in the Development of the Trees when worked on—*

INTERMEDIATE STEMPIECES OF ROKEWOOD GROWN ON NORTHERN SPY ROOTSTOCKS.

Cropping Period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1912-17	1	1 6	1 0	2 6	42·10
1918-24	1	350 14	374 7	725 5	51·62
1925-34	1	1,379 12	205 4	1,585 0	12·95
Total		1,732 0	580 11	2,312 11	25·11
		CLEOPATRA.			
1912-17	1	53 5	6 1	59 6	10·39
1918-24	1	641 5	71 9	712 14	10·04
1925-34	1	1,270 4	31 12	1,302 0	2·44
Total		1,964 14	109 6	2,074 4	5·27
		CLEOPATRA Q.			
1912-17	1	101 11	23 7	125 2	18·73
1918-24	1	897 10	226 7	1,124 1	20·14
1925-34	1	1,691 8	88 4	1,779 12	4·96
Total		2,690 13	338 2	3,028 15	11·16
		ESOPUS SPITZENBURG.			
1912-17	1	62 14	4 12	67 10	7·02
1918-24	1	881 1	173 6	1,054 7	16·44
1925-34	1	1,734 4	56 12	1,791 0	3·17
Total		2,678 3	234 14	2,913 1	8·06
		JONATHAN.			
1912-17	1	72 1	3 4	75 5	4·06
1918-24	1	258 11	44 2	302 13	14·57
1925-34	1	1,068 12	11 8	1,080 4	10·64
Total		1,399 8	58 14	1,458 6	4·04
		SHOCKLEY.			
1912-17	1	138 8	25 6	163 14	2·13
1918-24	1	435 13	329 5	765 2	43·04
1925-34	1	2,136 12	112 8	2,249 4	5·00
Total		2,711 1	467 3	3,178 4	14·70

TABLE IX.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by One Tree of each of Six Varieties during Stated Periods in the Development of the Trees when worked on—*

INTERMEDIATE STEMPIECES OF COLE'S PARADISE GROWN ON NORTHERN SPY ROOTSTOCKS.

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1914-17	1	—	0 13	0 13	100·00
1918-27	1	150 11	110 3	260 14	42·24
1928-34	1	401 0	189 12	590 12	32·12
Total	—	551 11	300 12	852 7	35·28
		CLEOPATRA.			
1914-17	1	17 5	4 15	22 4	22·19
1918-27	1	202 1	20 9	222 10	9·24
1928-34	1	188 0	27 4	215 4	12·56
Total	—	407 6	52 12	460 2	11·46
		CLEOPATRA Q.			
1914-17	1	11 5	1 4	12 9	9·95
1918-27	1	749 2	84 9	833 11	10·14
1928-34	1	848 4	44 4	892 8	4·96
Total	—	1,608 11	130 1	1,738 12	7·48
		ESOPUS SPITZENBURG.			
1914-17	1	0 5	—	0 5	—
1918-27	1	65 4	2 12	68 0	4·04
1928-34	1	299 4	4 8	303 12	1·47
Total	—	364 13	7 4	372 1	1·95
		JONATHAN.			
1914-17	1	7 3	—	7 3	—
1918-27	1	269 5	22 4	291 9	7·63
1928-34	1	250 12	3 12	254 8	1·47
Total	1	527 4	26 0	553 4	4·70
		SHOCKLEY.			
1914-17	1	6 1	4 12	10 13	43·93
1918-27	1	499 6	212 4	711 10	29·83
1928-34	*1	—	—	—	—
Total	—	505 7	217 0	722 7	30·04

* Top-grafted to Granny Smith, 1927.

TABLE X.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by One Tree of each of Six Varieties during Stated Periods in the Development of the Trees when worked on—*

INTERMEDIATE STEMPIECES OF WINTER MAJETIN GROWN ON NORTHERN SPY ROOTSTOCKS.

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1914-17	1	—	—	—	—
1918-27	1	229 12	54 4	284 0	19·10
1928-34	1	217 8	156 0	373 8	41·77
Total	—	447 4	210 4	657 8	31·98
		CLEOPATRA.			
1914-17	1	—	—	—	—
1918-27	1	100 12	64 0	164 12	38·85
1928-34	1	783 12	55 4	839 0	6·59
Total	—	884 8	119 4	1,003 12	11·88
		CLEOPATRA Q.			
1914-17	1	5 12	—	5 12	—
1918-27	1	463 0	149 10	612 10	24·42
1928-34	1	709 0	32 4	741 4	4·35
Total	—	1,177 12	181 14	1,359 10	13·38
		ESOPUS SPITZENBURG.			
1914-17	1	—	0 5	0 5	100·00
1918-27	1	154 11	50 14	205 9	24·75
1928-34	1	358 4	13 4	371 8	3·57
Total	—	512 15	64 0	577 6	11.16
		JONATHAN.			
1914-17	1	3 11	—	3 11	—
1918-27	1	106 15	9 0	115 15	7·76
1928-34	1	160 8	1 0	161 8	0·62
Total	—	271 2	10 0	281 2	3·56
		SHOCKLEY.			
1914-17	1	6 7	2 13	9 4	30·40
1918-27	1	302 5	136 10	438 15	31·13
1928-34	*1	—	—	—	—
Total	—	308 12	139 7	448 3	31·11

* Top-grafted to Granny Smith, 1927.

TABLE XI.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by Two Trees of each of Five Varieties during Stated Periods in the Development of the Trees, when worked on—*

INTERMEDIATE STEMPIECES OF ROME BEAUTY GROWN ON NORTHERN SPY ROOTSTOCKS.

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.	
		BALDWIN.			
1915-17	2	2 8	0 4	2 12	9·09
1918-28	*2	615 6	784 11	1,400 1	56·05
Total	—	617 14	784 15	1,402 13	55·95
		CLEOPATRA.			
1915-17	2	5 14	—	5 14	—
1918-27	2	869 15	566 15	1,436 14	39·46
1928-34	2	3,455 0	680 4	4,135 4	16·45
Total	—	4,330 13	1,247 3	5,578 0	22·36
		ESOPUS SPITZENBURG.			
1915-17	2	15 8	—	15 8	—
1918-27	2	764 5	190 1	954 6	19·91
1928-34	2	3,345 8	93 12	3,439 4	2·73
Total	—	4,125 5	283 13	4,409 2	6·44
		JONATHAN.			
1915-17	2	2 3	—	2 3	—
1918-27	2	998 13	65 1	1,063 14	6·12
1928-34	2	3,712 8	54 8	3,767 0	1·45
Total	—	4,713 8	119 9	4,833 1	2·47
		SHOCKLEY.			
1915-17	2	1 5	1 0	2 5	43·24
1918-28	2†	505 0	342 0	847 0	40·38
Total	—	506 5	343 0	849 5	40·39

* Two Trees topgrafted to Statesman, 1929.

† Two Trees topgrafted to Granny Smith, 1927.

spread of each tree.

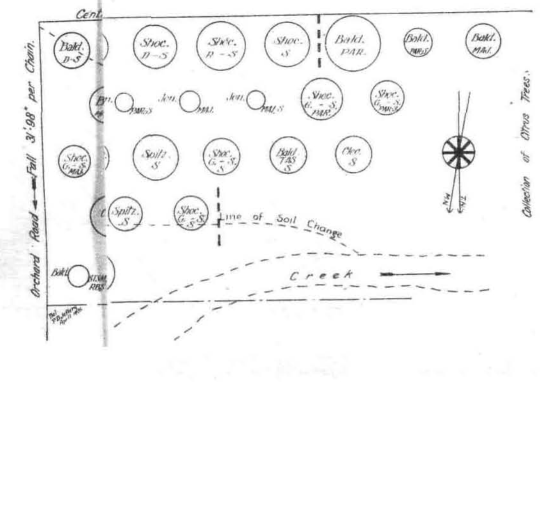

TABLE XII.—*Summary showing the Total Yields and Percentages of Apples Affected by Bitter Pit produced from Five to 36 Trees consisting of Six Varieties—GROWN ON NORTHERN SPY, WINTER MAJETIN, AND COLE'S BLIGHTPROOF PARADISE ROOTSTOCKS RESPECTIVELY. Similar data is also given from trees of the same Varieties when grown on—INTERMEDIATE STEMPIECES OF DUNN'S SEEDLING, ROKEWOOD, WINTER MAJETIN, COLE'S PARADISE, AND ROME BEAUTY, PREVIOUSLY GRAFTED ON NORTHERN SPY ROOTSTOCKS.*

Cropping period.	No. of Trees.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Affected by Bitter Pit.	Average annual yield per Tree.
		lbs. ozs.	lbs. ozs.	lbs. ozs.		lbs.
ON NORTHERN SPY ROOTSTOCKS.						
1912-26	*36	—	—	—	—	—
1927-29	†30	50,353 13	13,060 5	63,414 2	20·60	112·44
1930-34	24	—	—	—	—	—
1912-34	6	13,016 11	858 7	13,875 2	13·03	100·54
ON WINTER MAJETIN ROOTSTOCKS.						
1914-27 .... 1928-34	*6 5	4,945 10	859 1	5,804 11	14·80	55·81
ON PARADISE ROOTSTOCKS (COLE'S BLIGHTPROOF).						
1914-27 .... 1928-34	*6 5	7,974 8	1,663 12	9,638 4	17·26	83·08
INTERMEDIATE STEMPIECES GRAFTED ON NORTHERN SPY ROOTSTOCKS ON DUNN'S SEEDLING STEMPIECES.						
1912 to 1934	6	10,792 5	1,346 10	12,138 15	11·09	87·96
ON ROKEWOOD STEMPIECES.						
1912 to 1934	6	13,176 7	1,789 2	14,965 9	11·95	108·45
ON WINTER MAJETIN STEMPIECES.						
1914-27 .... 1928-34	*6 5	3,602 5	725 4	4,327 9	16·76	44·62
ON PARADISE STEMPIECES.						
1914-27 .... 1928-34	*6 5	3,965 4	733 13	4,699 1	15·62	41·58
ON ROME BEAUTY STEMPIECES.						
1915-27 .... 1929-34	‡10 *6	14,293 13	2,778 7	17,072 4	16·27	105·38

* Twelve trees of Shockley in all sections were top-grafted to Granny Smith in 1927.

† Four trees of Baldwin in all sections were top-grafted to Tasma, 1929.

‡ Four trees of Baldwin in all sections were top-grafted to Statesman, 1929.

TABLE XIII.—*Showing the Total Yields and Percentages of Apples affected by Bitter Pit, borne by each of Six Varieties grown on THREE DIFFERENT ROOTSTOCKS OVER STATED CROPPING PERIODS.*

Number of trees and Cropping Periods—	1912-27 = 36 trees. 1928-29 = 30 trees. 1930-34 = 24 trees.				1914-27 = 6 trees. 1928-34 = 5 trees.				1914-27 = 6 trees. 1928-34 = 5 trees.			
Rootstocks.	Northern Spy.				Winter Majetin.				Paradise (Cole's Blightproof.)			
Variety.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per Cent. Bitter Pit.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per Cent. Bitter Pit.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per Cent. Bitter Pit.
	lbs. ozs.	lbs. ozs.	lbs. ozs.	%	lbs. ozs.	lbs. ozs.	lbs. ozs.	%	lbs. ozs.	lbs. ozs.	lbs. ozs.	%
Baldwin ...	4,665 9	2,535 11	7,201 4	*35·21	686 12	291 0	977 12	22·76	2,021 8	745 14	2,767 6	26·95
Cleopatra ..	17,899 4	3,924 1	21,823 5	17·98	1,545 6	250 6	1,795 12	13·94	1,544 0	239 4	1,783 4	13·42
Cleopatra Q.	15,516 5	4,270 8	19,786 13	21·58	1,460 11	232 9	1,693 4	13·73	1,667 3	351 4	2,018 7	17·40
Esopus Spitzenburg	7,376 11	751 9	8,128 4	9·25	416 10	34 0	450 10	7·55	989 6	88 2	1,077 8	8·18
Jonathan ..	1,773 10	67 0	1,840 10	‡3·64	725 3	20 6	745 9	2·73	1,311 0	45 12	1,356 12	3·37
Shockley ..	3,122 6	1,511 8	4,633 14	*32·62	111 0	30 12	141 12	¶21·25	435 7	199 8	634 15	§31·42
Total Yields and percentages of Bitter Pit .	50,353 13	13,060 5	63,414 2	20·60	4,945 10	859 1	5,804 11	14·80	5,968 8	1,669 12	7,638 4	21·86

* Four trees of Baldwin top-worked to Tasma in 1929; two trees of Baldwin top-worked to Statesman in 1929.

† Six trees of Shockley top-worked to Granny Smith in 1927. ‡ One tree only of Jonathan in the trial.

¶ *One tree of Shockley top-worked to Granny Smith in 1927.* § *One tree of Shockley top-worked to Granny Smith in 1927.*

TABLE XIV.—*Showing the Total Yields and Percentages of Apples affected by Bitter Pit borne by each of Six Varieties when grown on FIVE DIFFERENT INTERMEDIATE STEMPIECES established on NORTHERN SPY ROOTSTOCKS.*

Variety.	Intermediate Stempieces.	1912-34 = 6 trees.				1912-34 = 6 trees.				1914-27 = 6 trees, 1928-34 = 5 trees.			
		Dunn's Seedling.				Rokewood.				Paradise (Cole's).			
	No. of Trees on each Stempiece.	Free from Bitter *Pit.*	Affected by Bitter *Pit.*	Total Crop.	Per cent. Bitter *Pit.*	Free from Bitter *Pit.*	Affected by Bitter *Pit.*	Total Crop.	Per cent. Bitter *Pit.*	Free from Bitter *Pit.*	Affected by Bitter *Pit.*	Total Crop.	Per cent. Bitter *Pit.*
		lbs. ozs.	lbs. ozs.	lbs. ozs.		lbs. ozs.	lbs. ozs.	lbs. ozs.		lbs. ozs.	lbs. ozs.	lbs. ozs.	
Baldwin ..	1	262 11	237 0	499 11	47·43	1,732 0	580 11	2,312 11	25·11	551 11	300 12	852 7	35·28
Cleopatra .	1	1,940 7	127 13	2,068 4	6·18	1,964 14	109 6	2,074 4	5·27	407 6	52 12	460 2	11·46
Cleopatra Q	1	2,513 6	272 2	2,785 8	9·77	2,690 13	338 2	3,028 15	11·16	1,608 11	130 1	1,738 12	7·48
Esopus Spitzenburg	1	2,084 5	220 11	2,305 0	9·57	2,678 3	234 14	2,913 1	8·06	364 13	7 4	372 1	1·95
Jonathan .	1	1,459 15	67 12	1,527 11	4·43	1,399 8	58 14	1,458 6	4·04	527 4	26 0	553 4	4·70
Shockley ..	1	2,531 9	421 4	2,952 13	14·27	2,711 1	467 3	3,178 4	14·70	505 7	217 0	722 7*	30·04
Total yields of six trees and percentages of crops affected by Bitter Pit ..		10,792 5	1,346 10	12,138 15	11·09	13,176 7	1,789 2	14,965 9	11·95	3,965 4	733 13	4,699 1	15·62

TABLE XIV.—*Showing the Total Yields and Percentages of Apples affected by Bitter Pit borne by each of Six Varieties when grown on FIVE DIFFERENT INTERMEDIATE STEMPIECES established on NORTHERN SPY ROOTSTOCKS.*—continued.

Variety.	Intermediate Stempieces.	1914-27 = 6 trees, 1928-34 = 5 trees.				1915-28 = 10 trees, 1929-34 = 6 trees.			
		Winter Majetin.				Rome Beauty.			
	No. of Trees on each Stempiece.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.
		lbs. ozs.	lbs. ozs.	lbs. ozs.		lbs. ozs.	lbs. ozs.	lbs. ozs.	lbs. ozs.
Baldwin	1	447 4	210 4	657 8	31·98	617 14	784 15	1,402 13†	55·95
Cleopatra	1	884 8	119 4	1,003 12	11·88	4,330 13	1,247 3	5,578 0	22·36
Cleopatra Q.	1	1,177 12	181 14	1,359 10	13·38	—	—	—	—
Esopus Spitzenburg	1	512 15	64 7	577 6	11·16	4,125 5	283 13	4,409 2	6·44
Jonathan	1	271 2	10 0	281 2	3·56	4,713 8	119 8	4,833 0	2·47
Shockley	1	308 12	139 7	448 3*	31·11	506 5	343 0	849 5‡	40·39
Total yields of six trees and percentages of crops affected by Bitter Pit	—	3,602 5	725 4	4,327 9	16·76	14,293 13	2,778 7	17,072 4	16·27

* One tree of Shockley topworked to Granny Smith in 1927.
† Two trees of Baldwin topworked to Statesman in 1929.
‡ Two trees of Shockley topworked to Granny Smith in 1927.

TABLE XV.—*Showing the Total Yields and Percentages of Apples Affected by Bitter Pit borne by TWELVE TREES OF GRANNY SMITH Variety topgrafted in* 1927 *on MATURE TREES OF SHOCKLEY and FOUR TREES EACH OF TASMA AND STATESMAN Varieties topgrafted in* 1929 *on BALDWIN.*

The *Periods of Cropping of these topgrafted Varieties together with the Rootstocks and Stempieces on which the original Shockley and Baldwin Trees grew are stated in the Table.*

Cropping Period.	No. of Trees.	Top worked in 1927 on mature of trees Shockley growing on Northern Spy Rootstocks.	Free from Bitter Pit.	Affected by Bitter Pit.	Total Crop.	Per cent. Bitter Pit.	Average Annual Yield per Tree.
			lbs.	lbs.	lbs.		
		GRANNY SMITH.					
1929-34	6	Topworked on Shockley on Northern Spy Rootstocks	4,792 0	53 0	4,845 0	1·09	134·58
1929-34	1	Topworked on Shockley on Cole's Paradise Rootstocks	849 0	14 0	863 0	1·62	143·83
1929-34	1	Topworked on Shockley on Winter Majetin	81 8	3 12	85 4	4·40	14·33
1929-34	1	Topworked on Shockley on Cole's Paradise Stempiece on Northern Spy Rootstocks	903 4	4 8	907 12	0·50	151·46
1929-34	1	Topworked on Shockley on Winter Majetin Stempiece on Northern Spy Rootstocks	432 8	8 8	441 0	1·93	73·50
1929-34	2	Topworked on Shockley on Rome Beauty Stempiece on Northern Spy Rootstocks	1,567 12	37 0	1,604 12	2·30	133·11
		Total	8,626 0	120 12	8,746 12	1·38	—
		TASMA (DEMOCRAT).					
1933-34	4	Topworked on Baldwin on Northern Spy Rootstocks	822 0	12 8	834 8	1·50	104·50
		STATESMAN.					
1933-34	2	Topworked on Baldwin on Northern Spy Rootstocks	320 0	—	320 0	—	80·00
1933-34	2	Topworked on Baldwin on Rome Beauty Stempieces on Northern Spy Rootstocks	347 8	1 8	349 0	0·43	87·25
		Total	667 8	1 8	669 0	0·02	—

THE AGRICULTURAL BUREAU OF SOUTH AUSTRALIA.

CONFERENCE OF SOUTHERN BRANCHES.

With an excellent attendance of delegates from Finniss, Strathalbyn, Port Elliot, Echunga, Yundi, Currency Creek, Aldinga, Inman Valley, Hope Forest, Belvidere, Hartley, and Mount Compass, Branches of the Agricultural Bureau in the Southern districts held their first Conference at Mount Compass on 15th August. Mr. A. S. Kidman presided, the Department of Agriculture being represented by Messrs. A. L. McEwin, M.L.C. (*Chairman Advisory Board of Agriculture*), W. J. Spafford (*Deputy Director of Agriculture*), R. C. Scott (Supervisor of Experimental Work), H. B. Barlow (Chief Dairy Instructor), C. F. Anderson (Poultry Expert), R. Hill, H. J. Apps, and H. H. Orchard (District Instructors), H. C. Pritchard (General Secretary), and F. C. Richards (*Assistant Secretary*).

Mr. R. H. Martin (member Advisory Board of Agriculture), in declaring the Conference open, expressed pleasure at the interest that settlers in the Southern districts were taking in the work of the Agricultural Bureau, which was evidenced by the

Delegates at the Southern Conference, Mount Compass, 15th August, 1935.

particularly fine attendance at the opening session. He recalled the fact that some years ago the country in the vicinity of Mount Compass was regarded as some of the most hopeless in South Australia, but since that time the country had taken on an entirely different aspect. With the clearing of the land, the application of intelligent methods and fertilisers, the country had been brought to a high state of productivity. The remarkable figures put up by the dairy herds of Messrs. C. Verco and H. B. Peters, and the outstanding success achieved in the raising of sheep and fat lambs by Messrs. A. S. Kidman and C. Simpson, were sufficient answer to those who doubted the agricultural future of the districts represented by the Conference.

During the discussion on a paper, "Experiences in Clearing Scrub in the Mount Compass District," read by Mr. H. J. Sneyd (Mount Compass), the Hon. A. L. McEwin, who was speaking at a Conference for the first time in his official capacity of Chairman of the Advisory Board, congratulated Mr. Sneyd on writing an excellent paper. He made special reference to the final paragraph of Mr. Sneyd's paper which read as follows:—"I would like to remark on the wonderful way in which the older established

settlers go out of their way to assist any newcomer who goes to them for advice. Things are pointed out, and it must have saved many new settlers pounds and pounds, besides stopping them starting on wrong lines.'' ''That,'' said Mr. McEwin, ''expressed in a few words the sentiment underlying the Agricultural Bureau.'' From the discussion that followed the reading of the paper, he was pleased to learn that settlers appreciated the services and advice given by the officers of the Department of Agriculture. Very little was spent on agricultural education in South Australia, less than any of the other States, and that, he considered, was a condition which should not exist in a State which was so dependent on primary production. The best way to increase those services was by expressions of appreciation, such as had been given in the dicussion of the paper.

Other papers were read as follows:—''Making the Most of a Small Holding,'' W. F. Roads (Inman Valley); ''Trees for Shelter and Timber,'' J. W. Crompton (Port Elliot); ''Control of Noxious Weeds,'' F. C. Keen (Port Elliot); ''How to Make Farming Pay,'' H. A. Eckert (Belvidere).

Departmental officers took part in the discussion following the reading of the papers, and the following resolutions were carried:—''That the 1936 Conference be held at Inman Valley''; ''that the Advisory Board be asked to request the combined Governments of the Commonwealth to unite in an endeavour to publish a Noxious Weeds Reference Book for the use of Education Departments of all States of the Commonwealth, and that this resolution be included on the Congress agenda.''

On the motion of Mr. J. Hudd (Hartley), seconded by Mr. W. Muldoon (Hope Forest), it was decided to ask the Government to retain Mr. R. Hill as the district agricultural instructor for the Southern districts. The resolution was supported by Messrs. J. Bice (Echunga), C. Bevan (Hope Forest), A. S. Kidman (Mount Compass), and carried unanimously.

Conference concluded with an address on his visit to Argentine, South Africa, and New Zealand, by Mr. W. J. Spafford.

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PAPERS READ AT CONFERENCES.

MURRAY LANDS WEST, KAROONDA, 6th AUGUST, 1935.

IS THE FARMER AN ASSET OR A LIABILITY TO THE COMMUNITY?

[E. L. Cowled, Borrika.]

The idea that the farmer can no longer be looked upon as the backbone of the country seems to be gaining ground, because in recent years the Commonwealth Government has set up a new department to administer and control many farmers' affairs; and it is thought that it is the community which is supporting the farmer, instead of the farmer supporting the community.

What does an average farmer produce in real wealth that is needed by the community? An average farmer can be taken as one who grows 1,000 bags of wheat each year, runs a flock of 200 sheep, from which he produces 150 lambs and cuts 2,000lbs. of wool at 10lbs. per sheep. He also runs 100 head of poultry, from which he gets 800doz. eggs, and keeps three cows, from which he makes 500lbs. of butter to sell. These figures may not be quite accurate, but for the purpose of this paper very near the average farmer's production.

How many people does this one farmer provide with the necessities of life (food and clothing)? The average consumption of bread for each person for one year is estimated to take 5bush. of wheat; therefore, this farmer provides the staff of life for 600 people for one year. The 150 lambs produced at an average weight of 32lbs. each total 4,800lbs., allowing 4lbs. per person per week, this will keep 22 people in meat for one year. The 2,000lbs. of greasy wool is equal to 1,000lbs. of clean wool and by making half that quantity into men's suits and half into blankets (6lbs. of wool to make a suit and 7lbs. a double blanket), material is manufactured for 83 men's suits and 71 double blankets. The butter produced from the cows would give 1lb. butter to 10 people for one year; and the 800doz. eggs would enable 52 people to have 1 egg for breakfast each day for 1 year. Thus this farmer supplies directly a large number of people with food and clothing.

Some of the indirect benefits are, first, there is the labour employed in the transport of his goods to the consumer; the machinery to be made and used and the labour employed in the making of his wheat into flour and bread, his wool into clothing, &c. Add to this, the making of machinery he requires to produce this wealth, the manufacture and transport of his super, cornsacks, fencing material, and the thousand and one things required on the farm. Can it be doubted that each farmer is a very real asset, and each one that goes out of production means a substantial reduction in the real wealth of the community?

One would naturally conclude that anyone producing so much that the community needed would at least get sufficient monetary return in exchange for it to pay the cost of production, and for him and his family to live in comfort, to educate his family, and make some profits to put by for an adverse season. But that such is not the case is proved by the huge sum of farmers' debts, the need of bounties and Farmers Assistance Boards, and Debt Adjustment Boards. And because the community takes all this wealth and hands back so little in money to the farmer in exchange, and he is unable to pay his way, he is told he is no longer the backbone of the country, and is looked upon by many as a liability.

The purpose of this paper is to show that he still is, and always must be, not a liability but a very real asset.

[Papers Read at Conferences.]

SOME EXPERIENCES WITH FRUITGROWING IN THE MURRAY MALLEE.

[W. R. TRESTRAIL, Coomandook.]

Fruit can be successfully grown in the mallee in a 15in. rainfall without irrigation. I planted a small fruit garden a number of years ago, and have grown good fruit of the following kinds:—Apples, apricots, pears, and figs. Plums and peaches can be considered, but have not done so well as the first-mentioned fruits. In selecting a site for a garden, choose if possible a sandy rise, with a good clay subsoil.

If finances permit, net in the garden to save damage from rabbits, hares, and possibly sheep or pigs. If the trees should be attacked, and the bark eaten off or in any way seriously damaged, bind the tree with wet clay and tie bagging around the clay. A good way to protect the trees is to whitewash the trunks, adding a little horse or cow manure to make it more effective in sticking to the tree.

When laying out the garden, plant a breakwind of trees around the outside. Sugar gums are good, but pines are better, either the Aleppo or Stone Pines. Almond trees could be also considered, as they will show a profit if the right kind are planted.

The trees should be planted in June or July, when the subsoil is thoroughly wet. Plough the ground in strips about 8ft. to 10ft. wide, to leave a strip that will counteract the drift in the summer. Prepare the holes about 1yd. square and about 2ft. deep. Loosen the bottom well and mix about a kerosene bucketful of old stable manure. Superphosphpate is not suitable for fruit trees. Do not plant the trees too close, 24ft. should be ample. The following varieties can be recommended:—Apples: Cleopatra, Glengyle Red, Gravenstein, Jonathan, Rome Beauty, and Granny Smith. Apricots: Riverside and Moorpark. Pears: Clapp's Favourite, Duchess, Packham's Triumph, and Howell. Figs: White Turkey and White Genoa.

Nectarines may be raised direct from seedlings, and figs and mulberries planted from cuttings. Vines could be planted near the house and trellised. Good returns have been obtained from Sultanas and Black Prince. Others should also do well. These can be planted from cuttings.

The trees should be pruned in July, keeping the middle thinned out to let the light into the centre of the tree. The ground should be ploughed in strips about the end of August or before the middle of September to check the drift sand.

If a bore of good water is convenient, the garden can be irrigated. A small garden is a useful hobby, as well as a saving in cash in the purchasing of fruit.

MY METHOD OF CROPPING.

[J. BULLER, Yurgo.]

After having tried several ways of cropping, I find that four years' rotation, fallow, wheat or oats, grazing, and grazing, is the best. Providing there is a good stand of Wimmera Rye Grass, which is not overrun with useless plants or bushes, and if there is little or no grazing owing to the growth of useless plants and bush, then a three-years' rotation is best. Wimmera Rye Grass is not subject to take-all, so that it helps to control the ravages of this disease, and reduces the loss to a minimum.

Before fallowing, graze the paddock as much as possible with sheep. See that the plough is in good order, and do not put the horses on to fallowing as soon as seeding is finished. Give them at least a week's rest and stable feed them duri g that time. Any type of plough will do for fallowing, providing that it will do a good job. This year I am using the disc plough, ploughing 2in. to 3in. deep. If it is wet, and the work is being done fairly early, I plough 3in. to 4in., but lessen the depth toward the end.

Fallow as early as possible for the following reasons:—A greater storage of soil water, increased supply of air, a better seed bed; soil bacteria are more active during wet weather, and more plant food is made available for the coming crop.

Next comes harrowing, which is done across the ploughing, with harrows fitted with patent points or shares. These cultivate, help to kill weeds, break up any lumps, and assist in the control of drift, by leaving the surface ridged. Harrowing is not done again unless at least ½in. of rain falls in October or during harvest, then as much land as possible is gone over and the work stopped as soon as dust starts to rise.

Autumn is the next working, and if blessed with more than ½in. of rain, harrows are worked the next day. Do not wait for it to stop raining, but be sure to again go over the piece which received the first working, because the weeds will have started to grow.

SEEDING OPERATIONS.

As a rule oats are sown about the second or third week in April, but before doing so see that the drill is in perfect order. Pay particular attention to the boots and scrapers, for it is very important that the seed should fall on the seed bed before any dry sand or loose soil.

For oats for hay, the early varieties such as Early Kherson, Mulga, &c., are favoured, and late varieties for grain, Algerian, Guyra, &c. They cover the ground quickly, which helps control the drift. The early varieties of oats can be cut and in the stack before the wheat is ready for reaping. Often with the late varieties the hay has to be left out until after reaping, and loses a lot of its feeding value.

Before drilling, cultivate with harrows with points on, and double harrow wherever necessary. If cultivating with harrows fitted with patent points, they may appear to be doing a good job, but in some places they make an uneven seed bed. This is the reason for double harrowing. I also harrow after drilling. For oats, sow about 50lbs. of seed and 90lbs. of super, 45 per cent. Start sowing on the 1st of May, using a late variety. The land is again cultivated with harrows with points on, and the work continued until the weeds are too big for the harrows to deal with; then the cultivator is started. I sow from 45lbs. to 60lbs. of seed and as much super as finances will allow. This year I sowed 105lbs. The seed is all recleaned before sowing and pickled with copper carbonate.

BIRDS AND THEIR VALUE TO THE MAN ON THE LAND.

[M. F. BALLARD, *Coomandook.*]

Quite a number of men realise the value of birds in controlling pests of various kinds, but there are those who cannot see any good in any of them.

Birds that come under the heading of meat eaters include eagles, hawks, crows, &c. They are usually shot on sight or destroyed in some way. Most farmers have to take steps to destroy rabbits, and the dead rabbits are left lying about to become breeding grounds for blowflies. These millions of flies would do untold damage if it were not for the fact that large numbers of the maggots are destroyed by crows, &c. The crows do an enormous amount of good in clearing up dead carcasses, and if they do kill a sheep now and again, it is usually because that sheep is too weak to get up. The crow does more good than the blowfly does harm. The same applies to eagles. One not infrequently sees eagles' nests with the bones of innumerable rabbits lying under them. These birds also dispose of a lot of carrion.

Crows, choughs, magpies, and all other strong-billed birds also account for huge numbers of grasshoppers, and after the last visit from those pests landholders should be more careful of the birds that they destroy. It is easy enough to destroy the birds, but then the countless thousands of insect pests they used to keep in check will overrun the country.

Another class of meat eaters, those which destroy insects and grubs, perform a very valuable work. They dispose of millions of insects that, if allowed to breed unmolested for a few months, would be a menace to the community.

The starling—an imported bird—does some damage, too; but these birds were responsible for killing thousands of grasshoppers last year.

The seed eaters include pigeons, quails, sparrows, &c. The pigeons will eat wheat when they get a chance, and sparrows are a nuisance when they build nests in the roof of the house or sheds and in implements, but there is nothing else that they do that can be counted as bad. On the other side of the ledger is the fact that they like small seeds, and eat numbers of weed seeds that would otherwise be a pest. An examination of the crops of a few pigeons showed that there was hardly ever any wheat or oats in them, but mostly the smaller seeds of weeds such as clovers, stinkwort, turnip, &c.

Quails hardly ever worry crops, but live almost entirely on weed seeds and grubs. The study of birds is an absorbing one, and if every farmer went to the trouble, he would soon find out just how valuable an ally they are to him.

Leave patches of scrub so that the birds may find sanctuary and breed there. Farmers will be more than repaid for the few acres of scrub, by the amount of good the birds will do.

THE HORSE ON THE FARM.

[G. SUTHERLAND, Copeville.]

On a large proportion of farms, the horse is the most neglected unit. He does not get half the care and attention that he is entitled to.

It does not matter what the team is like, so long as the animals are evenly matched. Do not keep a horse that is slow and a "pointer"; he is only an annoyance to the driver and the rest of the team.

Feeding.—This is the part of horse management which is most neglected. On numbers of farms there can be seen a yard with feeders around it. On others, a shed with a manger in it, and ten or perhaps fifteen or more horses are turned loose into it, with the result that the "boss" takes up enough room for three or four horses, and the timid horse stands back, and perhaps gets his feed after the others have finished.

It is much better to tie up each horse, then the teamster knows just how much each horse is getting, and if one horse has not eaten his breakfast, it is very noticeable, and can be treated accordingly, while with the loose feeding method it is quite easy for a horse not to have eaten his feed, and be overlooked. He is taken out to the paddock and is later found to be unfit for work, resulting in much loss of time.

The proper way to keep horses is to have a stable—a straw one will do—with a stall for each horse; and tie up each horse, also a peg in the post alongside his head to take collars, hames, and winkers.

There are two wrong ways of feeding horses. The man who underfeeds, and the man who tips in too much at a time. I recommend feeding four times a day and then giving each horse as much as he will clean up, and no more with supper the heaviest feed.

After feeding a team for three or four days, one can judge how much the horses will eat fairly accurately. There is no need to mention what happens to the team that is underfed. The man who tips in too much feed, will not get the best results from his horses or feed. At the next feeding time go to the feeder and pick up a handful of feed which was left over and smell it, it is tainted and sour after the breathing and nosing about by the horses.

I am a firm believer in feeding plenty of oats, in fact, I do not think horses can be given too many oats, provided it is worked up to them gradually and they are working heavily. When working, feed on good hay, chaffed oaten for preference—with three horses to a kerosene tin of crushed oats. Sometimes give more or less according to the work, that is, for breakfast and tea—no oats for the night feed.

When feeding nosebags in the paddock for dinner give mostly all oats and between six or seven double handsful to each horse. They do not take long to eat it, and the horses are better for it as they are not overful.

Grooming and Clipping.—Besides making him feel and look better, there is no better time than when grooming in the morning, to find out if the horse has any tender spots on the shoulders, for by paying attention when grooming it will be noticed that he eases away from the brush if there is any soreness.

While speaking of grooming, one cannot pass over the importance of clipping horses in the Autumn. When I first came to South Australia, I was amazed to notice that no one clipped their horses, and when I did clip mine, it was predicted that they would die, but such was not the case.

In clipping the horse, I take off all the hair on the belly, trace high, up round the shoulders and in between all four legs. Think for a minute and it will be realised how much cooler and freer a horse must be to work with all that hair off. He sweats very little and dries very quickly at night, and is not the wet coated and miserable looking object that one sees in the mornings towards the end of sowing time.

Another point in favour of clipping is that there is not so much hair on the shoulders to become matted, hence there is less chance of sore shoulders.

Harnessing and Sore Shoulders.—The collars should be close-fitting, not too wide, nor too long. It is preferable to run the risk of choking a horse down now and again than have the collar too big. Big collars are the cause of many sore shoulders.

The hames should be fitted well up to the collar, with the draft hook fairly high up from the point of the shoulders, for it is on the points of the shoulder that most sores occur. It is a very common fault to see the points of hames hanging down; two, three and even four inches from the collar. That is another source of sore shoulders. The hames should fit snugly around the collar and should be strapped tight.

Sore shoulders are chiefly caused by carelessness, lack of humanity and bad management. If a horse has a little lump on the shoulder in the morning, examine the collar for the cause. If it is rough, use a hammer or bottle on it. If the cause cannot be traced, cut a hole in a sugar bag to fit over the tender spot, and it will probably not go any further. Do not leave it and think it will be all right in a couple of days. Instead, there will be a raw spot. Other methods are to change the collar or alter the position of the draft hook on the hames. A change of hames sometimes has the desired effect. Too many oats do not cause sore shoulders. More sores are caused from the lack of oats.

Working.—When starting a team after a week or two's spell, give the horses an hour or two's work each day for the first few days, so that their shoulders will not scald. If they are inclined to be free, endeavour to restrain them a little.

It is always advisable to load light on farm work. Put in an extra horse or two, so that they can walk along, instead of making heavy work of it. It will be found to be cheaper at the end of the year. I always work the team tandem, using pulley chains. This method keeps the horses straight ahead of the implement, which makes a marked difference with harvesting machinery.

If a team is fed and handled on the lines suggested, with a good man in charge, the owner will have something to be proud of, and what is more, will not be far behind the tractor man at the end of five years on a mallee farm.

THE FUTURE OF THE MURRAY MALLEE.

[R. Elliot, Kulkawirra.]

The subject of the paper is one which is exercising the minds of a large number of people at the present time, because there seems to be a danger of some of the partly cleared country reverting to scrub, to become a worse menace to the cleared country than if it had never been touched, because it will now grow enough feed to breed a

supply of rabbits to overrun the surrounding country, and this county has been cleared at the expense of much hard work, with very little return, to the men who are losing it.

That the loss of this country is going to be a loss to the State goes without saying, for in its natural state it was practically valueless, but as soon as it was occupied and the occupier began to work it, it began to bring in revenue to the State. It is common knowledge that the mallee lines have been the best paying ones in the State, carrying as they have done large loads of heavy freight.

Wheatgrowing under present conditions is not a paying proposition, and the only hope for the future seems to be in providing feed and carrying larger numbers of sheep where sheep are already being carried, and in getting sheep on to all partially cleared land on which there are no sheep at present. A mallee farm without sheep can only be run at a loss. It will be necessary to fallow an area of land every year for the purpose of growing feed for sheep. Wimmera Rye grass seems to be the most suitable pasture plant, it is easily and cheaply established. In growing feed for sheep on fallow, include a small quantity of Wimmera Rye grass seed with whatever cereal is sown to provide the main feed crop, unless it is intended to fallow the area so used for a crop the year following the feed period. Lucerne does reasonably well, but it is fairly hard to establish, and rather expensive. One great need is for some suitable plant to grow on fallow to prevent drift, and to provide feed for sheep at the same time. Some hardy plant of the pea family, such as tares, could be tried for this purpose. The conservation of fodder as ensilage has been recommended, and may be of value, especially as feed for lambing ewes. The one obstacle appears to be labour, both in handling in the green stage, and later in feeding.

Each year foxes are responsible for the loss of many lambs. Foxes are very troublesome in large paddocks, particularly where there are bushes growing. They will kill big strong lambs several weeks old at times, but most damage is done while the lambs are very young. Some of these losses might be overcome by yarding the ewes in a small paddock and feeding with ensilage, so that the ewes will not run away through hunger and leave their lambs behind in the mornings, and will also come in towards camp in the evening.

PINNAROO LINE BRANCHES, LAMEROO, 8th AUGUST.

FAT LAMB BREEDING IN THE MALLEE.

[R. A. JENKINS, Lameroo.]

The majority of farmers in Mallee areas imagine that the greater the variety of lambs in their flock the greater the enchantment. It is not uncommon, on inspecting a farmer's rams, to see about half a dozen different colours, breeds, and shapes, and the ewes generally show just as wide a variation.

There are one or two salient features to be considered by those who contemplate lamb breeding. First, will the flock be managed primarily for the local or export market? and, of equal importance, what type of lamb is in demand in that market? Having decided these two points, the next decision is as to what type of parents should be used to produce those lambs, and at the same time adapt themselves to local conditions.

Unless the farmer is prepared to hand feed extensively, a very early lamb is not justified, because the average season does not open soon enough. If the lambs are of the Dorset or Suffolk type and they get a check, they take too long to recover, so that supplementary feeding must be added to the grazing to obtain the top prices of the early markets.

Catering for the export trade is where the average farmer goes astray. The export buyer does not want a long-legged, loose-loined carcass, nor does he want half a dozen different types. If farmers read reports on overseas shipments, they would be able to form some idea as to what is required by consumers.

The Southdown or Hampshire is the ideal type of sire for producing export lambs. Their progeny matures quickly, will recover from a lean time more quickly than any other breed, and the results of the lamb competitions during the last few years must surely have served the purpose for which the *Advertiser* proprietors in their wisdom inaugurated them.

For ewes, the big-framed crossbred is undoubtedly the best mother, but there are other factors to be considered by the farmer, such as tractability and the wool clip. Most farmers' fences are not of the best, and, as the crossbred is a notorious fencer, the big-framed Merino or the Corriedale is suggested.

In conclusion, use sufficient rams of one pure breed, study the consumers' requirements, feed the sheep well and handle them quietly, and do not market the lambs until they are ready.

HOW TO BREAK A COLT.

[C. H. B. Ross, Pinnaroo.]

To break an unbroken colt, have a good yard and a good strong rope about 40ft. long with a loop about 2ft. 8in. long. A long loop is advisable, for it gives a double rope around the horse's neck instead of a single rope where the short loop is used; it also prevents the horse from choking, because the end of the long loop will not pull over the knot tied in it. Have a stick about 10ft. or 12ft. long—a bamboo preferred for its lightness and less danger of injuring the horse. Drive the horse into a corner and pat him with the stick, all the time watching the horse's eye, patting all over his body and head. When the horse allows the stick to be put over his head without taking much notice, put the loop of rope over the end of the stick, allowing enough rope to make a large enough sling to slip easily over the horse's head. When the sling has been secured over the horse's head, see that it is well up on the head, with the knot of the loop well under his throat.

Have the assistant take the end of the rope around a strong post about 18in. above ground. This height will give less strain on the post and also help to prevent the rope from getting between the horse's ears, which is dangerous. Have the horse fairly close to the post, say, about 6ft. Have a man hold the other end of the rope by taking it around another post, making it easy for him to hold as the horse is pulling against him. By no means tie the rope until the horse has had a few good pulls. After the horse has stopped straining on the rope, approach him from the left, about level with his shoulder, with one hand extended, watching his eye all the time; pat him, talk to him coaxingly, and give him to understand that you are his friend. Obtain a leather headstall without a bit. Undo the noseband, unbuckle the headstrap. Approach the horse with the headstrap in the extended hand, and allow the horse to feel the headstall with his nose. Slip the headstrap over his head, rubbing him with one hand gently all the time. Buckle the headstrap. Do the same with the nose-strap. Hold the bit, slip a hand under his chin, buckle the bit on the off side first, hold the bitstrap on the near side, press the thumb against his gum, and slip the bit into his mouth, and then buckle. Get a light strap—the hames-strap of buggy harness will do. Slip the strap into the off side of the bit ring, pass it under the chin to the bit ring on the near side and buckle, to allow the bit to play freely in the horse's mouth. This is to prevent the horse pulling the bit ring into his mouth; also, it is easier for the man on the end of the reins when the horse is untied. The horse is now fully haltered.

Put a good rein on the near bit ring, slacken the tie rope, gently slacken the loop and take it off the horse's head. Now let the horse move around in the yard with the rein on the near side. Let him feel the rein gently at first, then make him move around in a circle to the left. Approach him and pat him, but be firm; also give him to understand that you are his master.

When the horse reins fairly well to the near side, put the rein on the off side bit ring and make him circle around to the off side for a while. Then put a rein on each side and make him stop and start at command. This should be enough for the colt's first lesson. Tie him up to a strong post at the manger with a bowline knot so that it may be untied without trouble.

When the horse is sufficiently trained to be put into the team, put him on the near side. Have a quiet horse next to him with a light rope doubly tied in a small loop just below the horse's hame hook. Put a rope halter over the colt's leather headstall and tie it into the loop of the hames of the horse next to him, just long enough to prevent the colt pulling on the rope halter when coupled up. When fully harnessed, keep a spare rein on him for the first round or two, but being tied to the other horses' hames the colt has very little chance of getting away. Put the colt on the near side of the team. All buckles are on the near side, and he has not the chance of loafing by letting his end of the swing rest against the double swing, which he has if put in the middle of the team.

To be a good horseman one must be fearless, be a lover of horses, and have unlimited patience. Use an open headstall for breaking young horses. Winkers should not be used altogether until the horse has worked for a time. If the colt does not take kindly to breaking in, or, if he is a kicker, tie up the near front leg by putting a loop around his fetlock. Pass the rope over his withers and pull it through under his girth. Lift his leg by pulling up, and let an assistant take up the slack of the rope. Pass it over the body again and under his girth, and the colt will be helpless. Let him caper around the yard on three legs. Keep pulling his head to the left, or else the rope over his withers will work over his body. Let him kneel and struggle until he is fully exhausted. Trim the tail and feet while the colt is tied up, and you will find that you have full control over him and he cannot do himself any harm.

CAN MORE USE BE MADE OF THE DEPARTMENT OF AGRICULTURE AND THE AGRICULTURAL BUREAU BY THE MAN ON THE LAND.

[L. ORWELL, Lameroo.]

Primary producers in South Australia have in the Department of Agriculture a splendid organisation which is capable of doing a lot more to help improve the position of the people on the land and the State in general, provided sufficient funds are made available for the department to carry out the necessary work.

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During recent years, much has been said of the fall in quality of exportable primary products. If the quality and grading of products are not in keeping with what is demanded by the buyers, then it becomes the duty of the Department of Agriculture to investigate the reason why, with a view to putting the producers in the way of supplying products of the quality and grading demanded by the purchasers.

Probably the greatest problem facing the State is the absorption of the labour power of its people. Secondary industries cannot anticipate much further expansion owing to geographical position, therefore rural primary production will have to be resorted to as a means of absorbing labour power.

In the good rainfall districts, the South and South-East offer possibilities, but the area is limited, and, in the case of the South-East, heavy expenditure would be involved in reclaiming and draining. During the last 25 years, large areas of Mallee lands have been brought into occupation, much of the land being in the light rainfall area beyond Goyder's line, and consisting of medium to very light land. These areas offer opportunity for experimental work, for in the early stages of development, cereal growing on the light land is a losing proposition, and, as a result, many have had to leave their blocks. Land such as this provides scope for extensive experimental work, with a view to ascertaining whether the light sandy land can be successfully occupied. Public facilities, such as railways and schools, have in most cases been put in these districts; in many cases roads require improvement.

With the opening up of so much light country, another problem is beginning to assert itself, namely, sand drift. This is another field for experimental work, with a view to overcoming a problem that will really become serious when all the scrub roots and natural vegetation are worked out of the soil.

The economic position has altered very considerably during the last 20 years, and as a result those engaged in rural primary production have had to meet very high production costs.

These fall both directly and indirectly on primary production and cannot be passed on to someone else, as is done in the highly protected secondary industries, because the primary producer has, in most instances, to sell his produce at world parity. Can the Agricultural Bureau, representing all rural primary producing interests, help the man on the land to overcome the difficulties mentioned? There is a limitation on the Agricultural Bureau when a question becomes political; however, a few alterations in the constitution would smooth away the difficulty mentioned. What a great service the Agricultural Bureau could render the man on the land if a Chamber of Rural Primary Production was formed by the Agricultural Bureau to work co-operatively with it. The chamber would be competent to handle Customs duties, taxation questions, matters appertaining to Acts of Parliament, and the numerous questions arising from time to time affecting the man on the land.

Probably the hardest problem to solve is Customs duties, because it more often than not operates indirectly and tends to give traders advantages to the disadvantage of the primary producer.

It is time something definite was done with a view to approaching the machinery manufacturers concerning the standardisation of agricultural machinery and duplicate parts, with a view to reducing the cost of machinery and duplicate parts and cost of distribution of same.

A few matters that would come within the scope of work of a chamber of primary production have been mentioned; many others present themselves daily—matters which are of considerable importance to the man on the land.

ADVISORY BOARD OF AGRICULTURE.

The monthly meeting of the Advisory Board of Agriculture was held on Wednesday, 28th August, 1935, there being present Messrs. J. W. Sandford (Vice-Chairman), who presided, R. H. Martin, S. Shepherd, Geo. Jeffrey, A. M. Dawkins, P. J. Baily, A. J. A. Koch, Dr. A. E. V. Richardson, Professor A. J. Perkins, and H. C. Pritchard (Secretary). Apologies were received from Messrs. H. N. Wicks and A. J. Cooke.

Congress.—The Secretary reported that His Excellency the Governor had intimated that he would be pleased to deliver the opening address at the 46th Annual Congress.

Branch to be Closed.—The Board decided to close the Overland Corner Branch.

New Branches.—Approval was given to the formation of a Branch at Brimpton Lake with the following as foundation members:—G. Dodd, V. Dodd, J. Dodd, A. Haines, A. Montgomerie, M. Aikenhead, M. Dunstan, E. S. Ashman, P. H. Wagner, H. Heard, J. Clothier, B. Rodgers. Conditional approval was also given to the formation of Branches at Devlin's Pound, Pinbong (Women's) and Georgetown (Women's).

Life Members.—Approval was given to the appointment of the following life members:—H. H. Howard, Petina; S. Shepherd, Kybybolite; B. Schenscher, Monarto South; L. N. Mills, Willowie; W. G. Crawford, Saddleworth; H. M. Parsons, T. C. Keen, J. W. Crompton, H. J. Jagger, Port Elliot. The congratulations of members of the Board were extended to Mr. Shepherd, who was present at the meeting.

New Members.—The following names were approved for addition to the rolls of existing Branches:—Alma—N. M. Freebairn, P. McD. Smyth, A. B. Smyth, H. L. Smyth, L. S. Smyth, R. M. McKenzie, M. McKenzie, J. L. C. Freebairn, C. Freebairn, H. B. Freebairn; Appila-Yarrowie—Arnold Wurst; Balumbah Women's—Mrs. W. Norris, Miss Alice Norris, Miss E. M. Swan, Miss L. M. Wohling; Baroota—V. D. Pillion, H. Dahlenburg, jun.; Belalie Women's—Mrs. A. H. Waitkie, Mrs. Jas. Rundle, Mrs. Jas. Sparrow; Berri—P. C. Andrew, A. Campbell; Blackheath—E. T. Talbot; Black Springs—A. Heinrich, W. P. Heinrich, jun., O. Kermode, B. Heinrich, N. Heinrich, W. Heinrich, W. Hollis, S. Harding, G. Harding; Boors Plains—H. B. East; Brentwood—J. H. McKenzie, Mervyn McKenzie, R. J. W. Longbottom; Brownlow—Lawrence Ramm, Ivan Ramm, Rube. Smith, M. O. Steinborner, F. W. Roocke, G. H. Roocke; Butler—Melvin Coleman, K. Stewart, H. G. Turner, C. S. Coleman, W. B. Tilly; Carey's

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Gully—H. V. Edwards, G. White, T. White, sen., W. Nicol, H. Nicol, F. Nicol, A. Squires, M. Cox, E. Little, W. Collins; Coonalpyn Women's—Mrs. E. Fox, Mrs. D. Chandler, Mrs. C. Todd, Miss Irene Todd, Miss Beatrice Todd, Mrs. C. Limbert, Mrs. I. Schottelius, Mrs. J. Barrie, Mrs. D. M. Coles, Miss A. Limbert; Currency Creek—Jas. Elfenbien, Sydney Weinert, Raymond Hersey, Edward Smith, Alan Woods, Matthew Dix; Eurelia—A. G. Polden, J. Polden, C. I. Phillis, J. Kildea, J. Y. Robertson, E. A. Wickens, E. W. Wickens; Eurelia Women's—Miss P. Kildea; Finniss—H. B. Mitchell; Green Patch—D. Cash, H. Whillas, A. Whillas, C. H. Whillas, G. J. Whillas, E. O'Connor, H. Hender, A. Derrington, S. Sinclair, S. McFarlane; Hanson—Geoff Gask, Jack Gask, Norman Shapter, Jas. Burford, Rex Turner, Mrs. Woolacott, Mrs. Goodridge; Hope Forest—H. J. Hunter; Kalangadoo—A. McCall; Ki Ki—K. C. Catt, A. L. Jackson, J. Griffith, D. Griffith, F. Blucher; Koolunga—E. K. Butterfield; Koppio—F. G. Gardner, F. O. Wait, A. Wait, G. Low; Kulkawirra—C. H. Robin; Kyancutta—T. L. Knight, L. J. Phillis, G. M. Grocke; Laura Bay—G. Barnett, F. J. Constable, W. Berry; Lipson—E. G. Darling; Lone Gum and Monash—J. Sawtell, T. W. Gainsborough, H. March; Longwood—W. Hughes; Maltee—Edward Ellis; Maltee Women's—Mrs. A. Edson, Mrs. E. Ellis; Mangalo Women's—Mrs. O. E. Hannemann; Millicent Women's—Mrs. P. Sullivan, Miss Kathleen Ey; Minnipa—W. Post, G. Potts; Mount Compass—C. B. Plaisted, R. Bishop, Alby. Simons, Geof. Stone, W. G. Hunter, H. Hunt, Vern. Martin, F. Simons, H. Brown, E. Miller, B. St. J. Proctor; Mount Gambier—D. Burnett, H. C. Knofell, A. M. Williams; Mudamuckla—A. C. Watson, L. S. A. Burner, T. R. Zippel; Mundalla Women's—Miss F. Jones, Miss E. Jones, Miss M. L. Jones, Miss E. Humphreys; Myponga—Dr. Souter, R. C. Llewellyn, H. Groves; Narridy—Bruce Darley, Albt. Darley, Geo. Renshaw, Don Button, Roy Darley, John Hill, H. Price, E. M. Klingner; Nelshaby Women's—Miss Verna Noble, Miss Doreen Noble; Nunjikompita—Harold Beattie, Clarence Gum, Horace J. Salmon; Owen—L. Lake, M. McPharlin; Parrakie—F. W. Gravestocks; Parrakie Women's—Mrs. B. Catford, Mrs. M. Nicholls, Miss Linda Beelitz, Mrs. A. J. Beelitz; Penola—A. J. Ricketts, T. J. Marcus; Penola Women's—Mrs. T. J. Marcus, Mrs. A. J. Ricketts; Petina—Basil Mudge, J. Anderson; Pinnaroo—Bert. Sheldon, A. H. Pitman; Pygery—D. J. Heath; Pygery Women's—Mrs Ruth Bean, Mrs. W. Jones, Miss M. Warnock, Miss E. Woodrup, Mrs. J. H. Foster; Red Hill—Max Button; Rendelsham Women's—Mrs. L. Redden; Roberts and Verran—G. E. Pedler; Rosedale—Erwin Dahlenburg, Oswald C. Dahlenburg; Saddleworth—Kevin Huppatz; Saddleworth Women's—Mrs. H. E. Draper; Sheoak Log Women's—Miss L. Schwarz, Miss R. Schwarz; Snowtown Women's—Mrs. N. H. Phillips, Mrs. R. Grigg; South Kinkerran—H. E. Gerschwitz, B. W. Schulz, I. Obst, R. Dix, G. Bittner, J. C. Scott-Todd, A. Arnold, R. E. Hasting, P. C. J. Marschall, O. B. Linke, H. O. Linke, E. F. Heinrich, W. A. Heinrich, A. Graefe, E. M. R. Dutschke, L. Ames, S. W. A. Heinrich, O. H. Heinrich; Stockport—H. A. Sandercock, C. Murray, Kingsley Rogers, T. Clayton, D. Higgins; Tantanoola Women's—Mrs. L. B. Medhurst, Mrs. R. Randall, Miss Mona Pycroft, Mrs. Joe A. Lane, Mrs. J. Nitschke, Mrs. V. A. Crowe, Mrs. Joe Chant; Taplan—W. L. Flynn, H. L. Tomlinson, K. C. Waters; Wallala—Fred. A. Agers, John Morgan, H. V. Brown, Stanley Morgan, L. R. Morgan; Wandearah—N. G. Dennis, Jas. Crouch, Norman Jacobs, Albert Vanstone, Alfred Greig, H. W. Roberts, M. S. Ferme, C. C. Perry; Wasleys—Colin Carmichael, Wm. Carmichael; Watervale—E. Glaetzer, R. Wurfel; Weavers—E. J. Algie, Claude Warren, Ern. Warren; Whitwarta—W. N. Butler; Wilmington—C. A. Barker, Wilfred Zimmerman, D. G. Zimmerman, J. M. Modystack; Wilmington Women's—Mrs. G. Duguid, Mrs. Bert. Noll, Mrs. Herb. Noll, Mrs. C. V. Collins, Mrs. L. H. Darwent, Mrs. C. Hunt; Wudinna—Cyril Hann, Thos. Johnson, sen., Erold J. D. Oswald; Yadnarie—R. B. Stirling, C. E. Jenkins, E. H. Hughes, Alf. Todd.

Conferences.—The Secretary reported that Conferences would be held at Alawoona, 1st October; Butler, 8th October; Yeelanna, 16th October; Wudinna, 18th October; and Lyndoch on 5th November.

Several items were taken in committee.

IMPORTS AND EXPORTS OF FRUITS, PLANTS, ETC., DURING MONTH OF JULY, 1935.

IMPORTS.

Interstate.

Apples (bushels)	280
Apples, Custard (bushels)	8½
Bananas (bushels)	16,284½
Citrus—	
Grape Fruit (bushels)	44
Oranges (bushels)	23
Passion Fruit (bushels)	331
Paw Paws (bushels)	11
Pineapples (bushels	1,123
Strawberries (bushel)	1
Nuts—	
Mixed (packages)	3
Peanuts (bags)	1,350
Peanuts, Kernels (bags)	90
Beans (bushels)	274
Cucumbers (bushels)	2
Lettuce (bushel)	1
Onions (bags)	1,078
Potatoes (bags)	9,740
Potatoes, Sweet (bushels)	44
Swedes (bags)	3
Bulbs (packages)	32
Plants, Ornamental (packages)	105
Roots, Grass (bag)	1
Seeds (packages)	48
Trees, Fruit (packages)	69
Trees, Ornamental (packages)	5
Wine Casks (No.)	3,504
Fumigated—	
Citrus—	
Grape Fruit (bushels)	24
Plants, Ornamental (packages)	6
Trees, Fruit (packages)	45
Trees, Ornamental (packages)	5
Wine Casks (No.)	113
Rejected—	
Bananas (bushels)	6
Paw Paws (bushel)	1
Lettuce (bushel)	1
Potatoes (bags)	17
Potatoes, Sweet (bushels)	5
Plants, Ornamental (packages)	4

Overseas.

(State Law.)

Wine Casks (No.)	1,953
Fumigated—Wine Casks (No.)	68

Federal Quarantine Act.

	Packages.	lbs.
Seeds, &c.	4,673	797,200
Canes	89	—
Cocoanut Chests	625	—
Corkwood	5	500
Tea chests	2,351	—
Fibre	1,518	512,585
Plants	2	110 (No.)
Timber	113,555	1,913,932 sup. ft.

EXPORTS.

Federal Commerce Act.

		Packages.
England	Apples	1
	Citrus— Oranges	10,878
	Trees	1
India	Apples	684
	Vegetables*	31
Netherlands, East Indies	Apples	446
	Citrus— Oranges	85
	Vegetables*	56
New Zealand	Citrus— Oranges	22,080
	Plants	9
	Seeds	88
Singapore	Apples	50
	Citrus— Oranges	22
	Pears	50
	Vegetables*	129
Straits Settlements	Vegetables*	15

* Potatoes excluded.

DAIRY AND FARM PRODUCE MARKETS.

A. W. SANDFORD & Co. LIMITED reported on 2/9/35:—

BUTTER.—Weather conditions being congenial throughout August, butter production satisfactorily advanced and it was estimated that supplies at the end of the month were 60 to 70 per cent. higher than for the corresponding period last year. This meant that heavy quantities were exported and, fortunately, the London butter market steadily improved and at date of report was ruling at 96s. to 97s. per cwt. for choicest Kangaroo. Local butter market under the equalisation plan has remained steady at the following rates:—Choicest creamery fresh butter in bulk, 1s. 2⅝d. per lb.; prints and delivery extra. (This price is for local sale only and, under the quota system, the equalised price manufacturers will receive will be 11.4375d. per lb., on which basis payments to cream suppliers will be calculated.) Separator lines from 8d. to 11½d. per lb. for chiocest; stores, 6d. to 8d. per lb. (These prices are subject to equalisation levies.)

CHEESE.—Naturally the same conditions in conection with the season apply to cheese also, and it is anticipated that record quantities will be manufactured this season as the pastures are now sufficiently advanced to ensure good spring and early summer feed. Milk supplies are steadily increasing and should continue to do so until the end of the year. Exporting to Britain was maintained of all surplus cheese thus keeping the market cleared. London prices were cabled as being from 47s. to 48s. per cwt. and local rates are:—Large and medium from 9½d. per lb.; loaf from 10d. per lb. at store door, delivery extra.; semi-matured and matured, 11d. to 11½d. per lb.

EGGS.—There was a very big increase in supplies received on the packing floors recently, and a good deal of the shortage earlier in the year was made up. Packing for export to Britain is now in full swing and present local rates are:—Ordinary country eggs, fair average quality, 6½d. per doz. net; long distance rail or shipping eggs, lower; selected new laid clean eggs, full-sized, to 11½d. per doz. net.

BACON.—The mild to cold weather has resulted in the consumption of bacon being well maintained and factories kept the markets regularly supplied from day to day. The demand was for prime quality factory bacon, there being little interest shown in farm cured lots. Rates are:—Best quality sides, 9½d. to 9¾d. per lb.; middles, 10½d. to 11d.; heavy middles, 9d. to 9½d.; rolls, 8d. to 8½d.; hams, 1s. 1d. to 1s. 2d.; cooked, 1s. 2d. to 1s. 4d. per lb.

ALMONDS.—Only light supplies have reached the market during recent weeks and there was a steady demand which readily absorbed all offering. Rates are steady at:—Softshells and Brandis, 8½d. to 9½d. per lb.; hardshells, 5d. to 5½d.; kernels 1s 9½d. to 1s. 10½d. per lb.

HONEY.—Little interest was shown in this commodity and, although odd parcels were sold Interstate, these were not sufficient to materially reduce the heavy stocks held and marketing conditions are still dull, rates being:—Prime quality clear extracted, 2½d. to 2¾d. per lb.; lower grades, 1d. to 2d. per lb.

BEESWAX.—Was in fair supply and met with steady demand at:—1s. 4d. to 1s. 4½d. per lb., according to quality.

LIVE POULTRY.—Auction sales are held every Tuesday, Wednesday, Thursday and Friday at our salerooms, which are in every way the best equipped in the State. With the nearer approach of the Royal Agricultural Show and with the stocks of dressed poultry in cold stores having been reduced, buyers competed more eagerly for all lots offering and rates for some grades were firmer, especially for prime quality heavyweight birds. We advise consigning. Crates loaned free on application. The following are prices realised:—Prime roosters, 3s. 6d. to 4s. 9d.; nice conditioned cockerels, 2s. 10d. to 3s. 5d.; fair conditioned cockerels, 2s. 3d. to 2s. 9d.; chickens lower; heavyweight hens, 2s. 9d. to 3s. 3d.; medium hens, 2s 4d. to 2s. 8d.; light hens, 2s. to 2s. 3d.; couple of pens of weedy sorts lower; prime young Muscovy drakes, 3s. 6d. to 4s. 6d.; young Muscovy ducks, 2s. 3d. to 3s. 1d.; ordinary ducks, 1s. 3d. to 2s. 3d.; ducklings lower; geese 2s. 9d. to 4s.; goslings lower; turkeys, good to prime condition, 7½d. to 9d. per lb. live weight; turkeys, fair condition, 6d. to 7d. per lb. live weight; turkeys, poor and crooked breasted, lower; pigeons, 6½d. to 7½d. each.

POTATOES.—New season's, 13s. per cwt.

ONIONS.—Brown Spanish, 11s. per cwt.

RAINFALL TABLE.

The following figures, from data supplied by the Commonwealth Meteorological Department, show the rainfall at the subjoined stations for the month of and to the end of August, 1935, also the average precipitation for August, and the average annual rainfall.

Station.	For Aug., 1935.	Av'ge. for Aug.	To end Aug., 1935.	Av'ge. Annual Rain-fall.
Far North and Upper North.				
Oodnadatta	0·59	0 18	2·58	4·66
Marree	0·63	0 36	2·35	5·88
Farina	0·72	0·40	2·37	6·43
Copley	0·35	0·63	1·73	7·87
Beltana	0·40	0·65	1·83	8·48
Blinman	0·70	1·06	2·19	11·86
Hookina	0·45	1·15	2·43	11·25
Hawker	0·99	1·39	3·38	12·26
Wilson	0·94	1·21	3 49	11·79
Gordon	0·79	1·06	3·04	10·53
Quorn	1·39	1·70	4·22	13·22
Port Augusta	1·02	0·89	5·36	9·44
Bruce	0·93	1·08	3·49	9·87
Hammond	0·70	1·26	3·95	11·21
Wilmington	1·65	2·14	6·85	17·32
Willowie	0·95	1·40	5·01	12·25
Melrose	3·48	2·74	13·38	22·88
Booleroo Centre	2·01	1·83	7·57	15·21
Port Germein	0·86	1·38	6·63	12·53
Wirrabara	3·39	2 42	10·45	19·29
Appila	1·96	1·71	9·21	14·65
Cradock	0·72	1·12	2·89	10·82
Carrieton	1·32	1·46	4·88	12·23
Johnburg	1·08	1·21	3·61	10·58
Eurelia	1·01	1·59	3·72	12·79
Orroroo	1·43	1·56	5·48	13·20
Nackara	0·71	1·12	3·95	11 09
Black Rock	1·43	1·46	4·94	12·37
Oodlawirra	0·76	1·30	4 00	11·68
Peterborough	1·21	1 54	5·92	13·22
Yongala	1·77	1 82	7·65	14·44
North-East.				
Yunta	0·22	0 72	2·93	8·55
Waukaringa	0·17	0·72	2·36	7·94
Mannahill	0·44	0·70	2·23	8·20
Cockburn	0·08	0·63	1·32	7·96
Broken Hill, N.S.W.	0·11	0·79	1·60	9·56
Lower North.				
Port Pirie	1·14	1·41	8·47	13·21
Port Broughton	1·43	1·67	10·06	13·88
Bute	2·24	1·95	9·83	15·44
Laura	2·11	2·20	10·88	17·95
Caltowie	1·41	2·11	8·36	16·74
Jamestown	2·42	2·25	10·22	17·69
Gladstone	1·94	2·02	10·08	16·29
Crystal Brook	1·40	1·96	11·14	15·78
Georgetown	1·77	2·26	10·37	18·37
Narridy	1·34	1·97	9·42	15·82
Redhill	2·05	2·19	12·28	16·59
Spalding	2·94	2·44	11·55	18·88
Gulnare	2·40	2·44	11·05	18·68
Yacka	2·00	2·02	10·63	15·39
Koolunga	1·63	2·00	9·61	15·38
Snowtown	2·87	2·10	11·00	15·74
Lower North—*continued*.				
Brinkworth	1·75	2·08	10·63	15·82
Blyth	2·26	2·03	12·79	16·78
Clare	2·97	3·07	15·91	24·51
Mintaro	3·44	3·32	16·02	23·42
Watervale	3·53	3·62	18·34	26·80
Auburn	3·17	3·04	16·49	23·98
Hoyleton	2·50	2·15	11·89	17·33
Balaklava	1·94	1·82	9·48	15·46
Port Wakefield	1·11	1·48	8·48	12·94
Terowie	1·73	1·63	6·16	13·35
Yarcowie	1·65	1·62	7·04	13·59
Hallett	2·57	2·15	10·74	16·46
Mount Bryan	2·78	2·27	11·91	16·83
Kooringa	2·31	2·20	10·51	17·85
Farrell's Flat	2·97	2·53	12·30	18·61
West of Murray Range.				
Manoora	2·48	2·58	12·81	18·92
Saddleworth	2·50	2·49	13·22	19·60
Marrabel	2·81	2·75	13·45	19·96
Riverton	3·28	2·72	15·46	20·81
Tarlee	2·76	2·28	11·71	18·10
Stockport	3·63	2·08	13·63	16·93
Hamley Bridge	2·11	1·98	10·89	16·54
Kapunda	2·96	2·45	11·51	19·79
Freeling	2·34	2·27	12·42	17·83
Greenock	3·53	2·83	14·46	21·53
Truro	3·20	2·61	12·39	19·89
Stockwell	3·22	2·56	13·29	20·13
Nuriootpa	4·03	2·71	16·59	20·72
Angaston	4·20	2·93	14·58	22·42
Tanunda	3·44	2·82	16·39	22·02
Lyndoch	3·24	3·16	15·72	23·40
Williamstown	3·44	3·79	17·01	27·77
Adelaide Plains.				
Owen	1·51	1·89	10·33	14·66
Mallala	2·18	1·94	9·72	16·56
Roseworthy	2·45	2·17	12·19	17·40
Gawler	2·90	2·26	12·56	18·91
Two Wells	2·18	1·83	14·12	15·75
Virginia	2·83	2·11	12·92	17·18
Smithfield	2·92	2·23	13·08	17·64
Salisbury	2·49	2·30	13·17	18·56
Adelaide	3·22	2·54	15·98	21·15
Glen Osmond	3·75	3·24	18·28	26·05
Magill	3·73	3·14	17·77	25·53
Mount Lofty Ranges.				
Teatree Gully	3·84	3·4[illegible]	19·03	27·20
Stirling West	5·79	6·35	36·83	47·08
Uraidla	4·28	5·90	29·93	44·19
Clarendon	3·81	4·28	22·62	23·88
Happy Val'y Res.	2·56	—	17·70	—
Morphett Vale	2·46	2·75	15·67	2[illegible]·66
Noarlunga	2·18	2·49	14·57	20·37
Willunga	2·42	3·22	17·50	26·02
Aldinga	2·14	2·49	13·57	20·27

RAINFALL—*continued.*

Station.	For Aug., 1935.	Av'ge. for Aug.	To end Aug., 1935.	Av'ge. Annual Rain-fall.
Mount Lofty Ranges—*continued.*				
Myponga	4·10	3·68	26·91	29·50
Inman Valley	4·86	—	24·53	—
Yankalilla	3·53	2·72	16·63	22·83
Mount Compass	3·45	—	—	—
Mount Pleasant	3·82	3·62	18·55	27·23
Birdwood	4·16	4·04	20·39	29·21
Gumeracha	4·92	4·59	23·67	33·41
Millbrook Res.	5·44	4·95	26·60	34·68
Tweedvale	5·89	5·04	28·32	35·99
Woodside	5·49	4·43	24·47	32·31
Ambleside	4·87	4·83	26·24	34·90
Nairne	4·34	3·59	20·59	28·22
Mount Barker	4·21	4·16	21·71	31·31
Echunga	4·82	4·28	24·77	33·30
Macclesfield	4·13	3·88	21·47	30·43
Meadows	4·43	4·58	24·88	36·16
Strathalbyn	3·22	2·34	14·50	19·31
Murray Flats and Valley				
Meningie	1·52	2·19	11·29	18·37
Milang	1·81	1·68	8·86	14·91
Langhorne's Ck.	1·98	1·73	10·04	14·87
Wellington	1·58	1·66	10·00	14·65
Tailem Bend	1·75	1·72	10·33	15·06
Murray Bridge	1·45	1·47	7·76	13·56
Callington	2·07	1·83	8·49	15·19
Mannum	2·29	1·24	8·20	11·49
Palmer	3·55	1·99	11·67	15·63
Sedan	1·24	1·50	6·06	12·11
Swan Reach	1·36	1·14	6·07	10·64
Blanchetown	0·99	1·11	4·89	11·01
Eudunda	2·26	2·24	12·05	17·17
Pt. Pass	2·46	2·56	11·92	—
Sutherlands	0·94	1·35	4·78	10·84
Morgan	0·60	0·95	3·99	9·17
Waikerie	0·66	1·05	4·83	9·65
Overland Corner	0·40	0·99	3·48	10·32
Loxton	0·86	1·33	4·76	11·54
Berri	0·50	1·26	5·43	10·17
Renmark	0·59	1·08	5·76	10·41
West of Spencer's Gulf				
Eucla	0·61	0·95	9·46	9·96
Nullarbor	0·52	0·98	10·70	8·81
Fowler's Bay	1·22	1·48	9·04	11·94
Penong	1·75	1·65	8·22	12·27
Koonibba	2·18	1·71	8·92	12·13
Denial Bay	1·62	1·60	7·50	11·36
Ceduna	1·70	1·38	8·17	10·16
Smoky Bay	1·50	1·41	7·78	10·53
Wirrulla	2·18	1·63	10·29	10·54
Streaky Bay	1·75	2·02	12·99	14·88
Chandada	1·80	2·23	9·93	—
Minnipa	1·44	2·02	9·45	14·06
Kyancutta	1·30	2·08	10·29	—
Talia	1·23	2·25	10·92	14·76
Port Elliston	1·95	2·35	13·54	16·54
Lock	2·10	2·70	11·91	16·52
Mount Hope	2·44	—	16·11	—
Yeelanna	2·58	2·47	15·72	15·94
Cummins	2·56	2·79	15·40	17·60
Port Lincoln	2·83	2·67	12·67	19·42
Tumby	2·10	1·80	10·40	14·12
Ungarra	2·48	2·28	12·86	16·85
Port Neill	1·54	1·55	8·90	13·09

Station.	For Aug., 1935.	Av'ge. for Aug.	To end Aug., 1935.	Av'ge. Annual Rain-fall.
West of Spencer's Gulf—*continued.*				
Arno Bay	1·57	1·49	9·66	12·65
Rudall	1·64	1·78	10·60	12·64
Cleve	1·93	1·83	12·57	14·88
Cowell	1·62	1·12	6·45	11·07
Miltalie	1·97	1·53	11·08	13·67
Mangalo	1·28	1·81	9·18	13·91
Darke's Peak	2·04	2·29	12·50	15·18
Kimba	1·44	1·66	8·78	11·82
Yorke Peninsula.				
Wallaroo	1·73	1·56	10·20	13·98
Kadina	1·98	1·89	11·75	15·64
Moonta	2·25	1·70	10·35	15·06
Paskeville	1·88	2·11	9·94	15·49
Maitland	2·96	2·56	14·95	19·90
Ardrossan	2·57	1·78	10·57	13·97
Port Victoria	1·05	1·90	9·20	15·44
Curramulka	1·93	2·35	10·68	17·87
Minlaton	1·45	2·41	10·45	17·79
Port Vincent	2·49	1·82	9·25	14·43
Brentwood	2·01	2·01	11·39	15·55
Stansbury	2·15	2·17	11·04	16·82
Warooka	2·10	2·39	11·69	17·49
Yorketown	2·57	2·23	14·50	16·88
Edithburgh	2·50	2·06	12·11	16·37
South and South-East.				
Cape Borda	3·50	3·45	23·04	24·82
Kingscote	2·87	2·54	16·93	19·14
Penneshaw	3·17	2·59	15·06	18·92
Victor Harbour	3·67	2·54	15·98	21·37
Port Elliot	2·82	2·36	12·63	19·93
Goolwa	2·81	2·04	11·52	17·85
Maggea	0·81	1·34	5·45	10·04
Copeville	1·50	1·36	7·62	11·51
Claypans	1·86	1·41	7·01	10·38
Meribah	0·87	1·05	5·90	11·31
Alawoona	1·37	1·14	6·04	10·36
Caliph	0·98	1·72	5·35	—
Mindarie	1·42	1·56	6·60	12·21
Sandalwood	1·64	1·73	8·49	13·66
Karoonda	2·20	1·89	9·76	14·36
Pinnaroo	1·06	1·72	5·80	14·43
Parilla	1·39	1·72	7·83	13·82
Lameroo	1·78	1·88	8·55	15·97
Parrakie	2·59	1·94	11·48	14·62
Geranium	2·98	2·20	12·55	16·51
Peake	2·49	2·04	12·80	16·01
Cooke's Plains	2·43	1·85	11·05	15·30
Coomandook	2·37	2·14	11·79	17·09
Coonalpyn	2·62	2·14	13·46	17·61
Tintinara	2·33	2·23	13·78	18·71
Keith	2·76	2·16	13·66	17·92
Bordertown	2·46	2·22	13·96	19·21
Wolseley	2·37	2·23	13·38	18·49
Frances	3·05	2·49	16·78	20·11
Naracoorte	3·44	2·77	19·03	22·66
Penola	4·06	3·31	19·30	26·01
Lucindale	4·15	3·02	22·76	23·34
Kingston	2·66	3·11	19·06	24·28
Robe	2·46	3·31	20·65	24·67
Beachport	2·89	3·55	23·06	27·09
Millicent	3·65	3·88	26·28	29·79
Kalangadoo	3·25	4·16	22·76	32·28
Mount Gambier	3·19	3·89	19·93	30·45

AGRICULTURAL BUREAU REPORTS.

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Arthurton	*	—	—
Ashbourne	*	9	6
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Balaklava	*	28	E
Balhannah	*	—	—
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Berri	292	7	11
Blackheath	293	17	14
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Block E	*	—	—
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Booborowie	292	7	11
Booleroo Centre	292	30	22
Boolgun	—	—	—
Boor's Plains	292	—	—
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Chandada	293	—	—
Chapman's Bore	*	14	11
Charra	*	—	—
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Karte	*	—	—
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Ki Ki	*	—	—
Kilkerran	290	10	7
Koolunga	291	—	—
Koonunga	—	—	—
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Milang	*	12	9
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Monarto South	284	—	—
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Moorook	*	—	—
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Mount Compass	*	—	—
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Murray Bridge	*	—	13
Murraytown	292	—	—
Mypolonga	*	—	—
Myponga	*	17	21
Nantawarra	*	10	7
Narridy	292	—	—
Narridy Women's	304	—	—
Narrung	*	—	—
Nelshaby	*	—	—
Nelshaby Women's	*	—	—
Nunjikompita	*	10	7
Nunkeri	*	10	7
O'Loughlin	*	14	11
O'Loughlin Women's	304	—	—
Owen	*	14	11
Palabie	393	—	—
Parilla	*	—	19
Parilla Women's	*	16	20
Parilla Well	*	14	11
Parilla Well Women's	296	29	26
Parrakie	*	—	—
Parrakie Women's	*	29	26
Paskeville	292	8	5
Penola	*	5	2
Penola Women's	304	—	—
Penwortham	291	9	6
Petina	292	26	23
Pinbong	*	—	—
Pinkawillinnie	293	—	—
Pinnaroo	292	—	—
Pinnaroo Women's	304	11	1
Port Elliot	*	—	—
Pygery	293	8	5
Pygery Women's	*	—	—
Ramco	291	7	11
Redhill	292	—	—
Rendelsham	291	12	9
Rendelsham Women's	—	—	—
Renmark	*	—	11
Riverton	*	14	—
Roberts and Verran	*	—	—
Rosedale	291	—	—
Roseworthy	*	—	—
Saddleworth	304	11	8
Saddleworth Women's	—	1	5
Scott's Bottom	*	12	9
Sheoak Log Women's	301	—	—
Shoal Bay	*	8	5
Snowtown	*	11	8
Snowtown Women's	304	3	7

Branch.	Report on Page.	Dates of Meetings	
		Oct.	Nov.
South Kilkerran	292	7	4
Springton	293	2	6
Stanley Flat	*	21	18
Stockport	292	—	—
Strathalbyn	*	9	13
Sutherlands	*	3	—
Tantanoola	291	5	2
Tantanoola Women's	304	2	6
Taplan	*	8	5
Taplan Women's	304	—	—
Taragoro	284	*10*	7
Tarlee	292	—	—
Tatiara	*	—	—
Tintinara	*	—	—
Truro	292	21	18
Tweedvale	*	17	21
Tweedvale Women's	*	21	18
Ungarra	293	—	—
Upper Wakefield	*	10	7
Wallala	293	9	13
Wandearah	292	8	5
Warcowie	*	8	5
Warcowie Women's	300	—	—
Warramboo	288	8	5
Warramboo Women's	*	—	—
Wasleys	292	10	14
Wasleys Women's	304	3	7
Watervale	*	21	*18*
Weavers	292	14	11
Wepowie	*	7	11
Wepowie Women's	303	—	—
Whitwarta	283	21	R
Wilkawatt Women's	296	15	19
Williamstown Women's	304	2	6
Willowie	*	28	25
Wilmington	292	15	19
Wilmington Women's	298	10	14
Wirrabara	*	—	—
Wirrabara Women's	304	—	21
Wirrilla	*	—	9
Wirrilla Women's	*	3	—
Wolseley	287	14	9
Wudinna	*	—	—
Yadnarie	286	8	5
Yandiah	292	11	8
Yeelanna	*	9	6
Younghusband	*	—	—
Yundi	293	—	—
Yurgo	—	—	—
Yurgo Women's	—	—	—

* No report received during the month of August R In recess.
If dates do not appear above, Secretaries are requested to advise the General Secretary of details of Branch programmes, or of the regular night of meeting, *e.g.* 3rd Monday in month.

AGRICULTURAL BUREAU OF SOUTH AUSTRALIA

Every producer should be a member of the Agricultural Bureau. A postcard to the Department of Agriculture will bring information as to the name and address of the Secretary of the nearest Branch.

If the nearest Branch is too far from the reader's home, the opportunity occurs to form a new one. Write to the Department for fuller particulars concerning the work of this institution.

[The new Bureau subscription rate of 2s. per annum, which was recommended at the 1933 Congress, applies to all members as from August 1st, 1934, with the following exceptions:—Life Members, Branch Secretaries, and members who reside in the same house as (a) a Life Member, or (b) a Branch Secretary, or (c) a subscribing member. Subject to the foregoing exceptions, new members joining during the months of July to December will pay 2s. per annum, and those joining during the months of January to June 1s. for that period and 2s. for each succeeding year. Subscriptions must accompany the nomination forms unless the nominee is exempt.]

MEN'S BRANCHES.

SUBJECTS DISCUSSED AT BUREAU MEETINGS.

If you have no other subject in mind, here is a list from which you might choose when asked to contribute to your branch programme. The list has been compiled from published branch reports.

Agriculture.	Horticulture.	Livestock.	General.
Barley Growing.	Cincturing.	Calf Rearing.	Afforestation.
Harvest Reports.	Spraying.	Care of Farm Livestock.	Beekeeping.
Pasture Management.	Pruning.	Management of Horses.	Bird Pests.
Fallowing.	Orchard and Garden Pests.	The Brood Mare.	Blacksmithing.
Care of Machinery.	Fruit Drying	Colt Breaking.	Book-keeping.
Control of Drift.	*Drainage.*	*Shoeing Horses.*	Preparations for Drought.
Fodder Crops.	Potatoes.	Sore Shoulders.	Ensilage.
Haymaking.	Tomato Culture.	Weaning Foals.	*Labor Saving Hints.*
Crop Rotation.	Vegetable Growing.	Lamb Marking.	Fencing.
Seeding Operations.	Citrus Culture.	Sheep Management.	Fodder Conservation.
Wheat Pickling.	Packing and Grading Fruit.	Wool Classing.	Vermin Destruction.
Wheat Diseases.	Budding and Grafting.	Shearing.	Care of Hides and Skins.
Wheat Varieties for the District.	Orchard Cultivation.	Sheep Dipping.	Farm Insurance.
Seed Wheat.	Rack Building.	Fat Lambs.	Tank Building.
Value of the Oat Crop.	Fruit Preserving.	Handfeeding Sheep.	Shed Construction.
Wheats for Milling.	Irrigation.	Poultry.	Farm Conveniences.
Peas.	Seepage.	Shelter for Livestock.	Concrete on the Farm.
Wheat *v.* Sheep.	*Care of Orchard Equipment.*	Management of the *Dairy Cow.*	Dam Sinking.
Wheat Varieties for Hay.	Farm Garden.	Care of the Breeding Ewe.	Scrub Farm Operations.
Crop Competitions.	*Diseases of the Vine.*	*Pigbreeding and* Management.	Farm Sidelines.
Harvest Operations.	Manures for the Orchard.	Ailments and Diseases of Farm Stock.	Bacon Curing.
Value of Agricultural Experiments.	Fruit Tree Diseases.	Sheep *v.* Wheat.	Value of Native Birds.
Cultivation.	Planting the Orchard.	Rearing Turkeys.	Noxious Weeds.
Fertilisers and Manures.	Frost Prevention.	Horse Breeding.	The Agricultural Bureau.
Cultivator *v.* Plough for Fallowing.	Fumigation for Scale Insects.	Herd Testing.	Handling Dairy Produce.
Tobacco Culture		*Rams for Farm Flocks.*	Farm Buildings.
Meadow Hay.			Layout of the Farm.
Review of the Past Season.			Firefighting.
			Lowering Costs of Production.
			Farm Records.
			Subdivision of the Farm.

MOULDBOARD PLOUGHS V. DISC IMPLEMENTS.

The above was the subject of a debate held by the Coonalpyn Branch on 14th August. Messrs. C. T. George, E. Fox and H. Mincham spoke in favour of disc implements, and Messrs. C. Todd, sen., C. L. George, and R. V. Potter supported the mouldboard plough.

Chas. T. George stated that with the disc cultivator, one could go over the land in half the time taken with the plough and with equally good results, because it would not choke with rubbish, it would chop down the shoots, work the land to a finer tilth in the two operations, was lighter in draft and was altogether the better machine in scrub country.

C. Todd, sen., said that the stump jump mouldboard plough, when set so as to run true and worked under the conditions it was built for, gave excellent results. It was ideal for clearing out the bottom of the furows, leaving no ridges. All the ground was moved and well turned over, leaving a level bottom, which the disc implement would not do. The plough would pull more stumps than the disc and in ploughing grass and weedy land, the mouldboard turned the soil well over, covering both grass and weeds. Both types of plough were needed on a scrub farm, because until the land was well cleared there was work suited to each.

E. Fox, sen., stated that if it were not for the disc plough, hundreds of thousands of acres of mallee land would still be in a virgin state. In their district, if the mallee was rolled directly after seeding and burnt in March or April following, and then after seeding the land was worked three times with a light disc implement and sown early with Algerian oats, there would be very little trouble in getting a fire over the stubble. If one repeated the discing with a light disc plough during the following year and drilled oats again early, the land would be practically cleared, thanks to the light disc plough. In clearing heath land, one ploughing with a single jump disc plough, heavy type, would not clear the land, but would leave it in such a state that with ordinary care the yaccas were not hard to deal with. No other plough would do that. On old ground he had ploughed with a light twin disc, from 3ins. to 4ins. deep, and a heavy crop of dandelions and sheep weed resulted. That was turned under using the twin disc again, and a crop of pease was eventually sown on beautifully clean land. The light disc would leave a level bottom, when given the opportunity by working the land when in a suitable condition. The disc did turn the soil over as he frequently noticed on the surface a piece of clay which had certainly come from the bottom of the furrow. The disc would pull a large proportion of roots, and by running sheep over the ground for a year or two another ploughing would bring out the balance.

C. L. George stated that in new mallee country, the ground was a network of roots from 2ins. to 4ins. below the surface, and the share mouldboard plough got under the roots with the share and tore them up, thus giving the sown plant a better chance of moisture than among a network of roots. When a share plough had been used for breaking up the soil, the wheat or oat plant would grow right up to the root of the mallee, but when disced, nothing grew within a foot or two of the stump. The disc would not destroy the network of running roots, but merely jumped them if they were of any size. With the mouldboard better work was done in slicing the soil clean from the bottom of the plough and turning it right over, thus helping to kill most of the rubbish. In stony or rubble ground the disc would not penetrate the soil to any extent, the discs merely ran over any stones or obstructions, whereas the share plough dug underneath and pushed the obstruction to one side. For permanent clearing the share plough was unsurpassed, because it pulled more stumps per acre of ploughing than the disc. The disc certainly pulled out a few light or rotten roots, but should a stump resist, the disc would jump over it it, while as a rule the share plough dug in further and in most cases pulled out the root. It was better to pull out a root than to chop off the shoots as the disc did.

H. Minchan stated that he used a single jump disc plough as a means of pulverisation of the soil and it could not be excelled. He put it into the ground down to a foot deep, and by that method wrenched out practically all the yacca and small bushes which a share plough could not remove. A disc plough was able to work land that a mouldboard plough would not be able to deal with.

R. V. Potter stated that the mouldboard plough left a far more level seedbed. In the breaking up of ley land it left the furrows open to a certain extent, which allowed the air to percolate through the soil, whereas the disc threw down the furrows on top of each other in such a manner that the soil settled down and allowed no aeration.

Chas. T. George, in reply, said that the disc implement, being able to ride over obstructions, made for saving of time, and that the disc by passing the soil to one side did work that was equally as good as that of the mouldboard which turned the soil over. A disc machine would do all a mouldboard plough could do and more, as it worked land where a mouldboard would be useless.

Chas. C. George, in commenting on the foregoing debate, said that in shoot cutting and stirring up the soil in one operation the disc had the advantage, but the best results would be obtained by breaking up the land with the mouldboard plough, followed by judicious cultivation. J. Haydon had noticed that the ground was cleared much better and in less time by the use of the mouldboard plough, and the resulting returns were better than those received from the use of the disc.

C. G. L. Tiller said that after a few years when the land was cleared the disc was placed in the background and mouldboard ploughs and share cultivators were outstanding features in the preparation of the soil for cropping. A vote of members was taken and resulted as follows:—In favour of mouldboards, 19 votes; in favour of discs, 9 votes. (Chas. C. George, Secretary.)

THE APPLICATION OF NITROGENOUS FERTILISERS TO CEREAL CROPS.

At a meeting of the Whitwarta Branch held on 19th August, and attended by 18 members and 1 visitor, Mr. R. I. Herriot, B.Sc. Agric., read the following paper:—"At the opening of the Waite Agricultural Institute in 1925, amongst the first field experiments laid down was one to test several rotations, to determine the one most suitable to existing conditions in a less severe type of Mediterranean climate than we experience in this district and a rainfall of approximately 24 inches.

It soon became evident that under such conditions moisture was not the limiting factor in crop production, as is the general experience of the greater part of the wheat belt, and that almost as good wheat yields followed upon the pea crop as after a well-worked fallow. The explanation of this, of course, is that the pea crop builds up the nitrogen supply of the soil just as does a well-worked fallow. The possibility under such conditions of doing away with fallow and growing either a pea crop or supplying sulphate of ammonia to stubble lands was soon realised. The Waite Institute has now conducted a series of experiments upon the subject over a period of five years. Some very striking results have been obtained and these have directly responsible, during the last few years, for a drive by fertilizer companies to sell super-ammonia mixtures. An indication of the possibilities of super-ammonia mixtures under Waite Institute conditions will be given by a summary of their results over the period. The first point which shows up is that no appreciable increase in yield was obtained by applying sulphate of ammonia to crops sown on fallowed land. With stubble crops, however, very marked increases were obtained. The following is a list of average results over a period of three years, all plots receiving 2cwts. superphosphate and 1cwt. sulphate of ammonia per acre:—

Wheat after wheat; increase 7.7 bushels per acre due to nitrogen.
Wheat after barley; increase 7.1 bushels per acre due to nitrogen.
Wheat after oats; increase 6.5 bushels per acre due to nitrogen.
Wheat after peas; increase 6.1 bushels per acre due to nitrogen.
Wheat after fallow; increase .2 bushels per acre due to nitrogen.

Hence, under these conditions it can be seen that sulphate of ammonia has great possibilities in relation to stubble cropping, but it must be remembered that these results were only obtained after a primary dressing of 2 cwts. superphosphate per acre had been given. This necessity to first satisfy the plant's superphosphate requirement is most important, and any attempt to obtain results in any district with sulphate of ammonia at the expense of super. can only meet with disaster. These results obtained at the Waite Institute stimulated experiments throughout South Australia during last year. The results, although for only one season and therefore liable to considerable error, can however give some indication of what may be expected from super-ammonia mixtures. Of representative places throughout the State three only gave definitely profitable results, these being on Kangaroo Island and at Gawler River. The position throughout the remainder of the State is still fairly doubtful, but where certain special conditions exist it seems possible that mixtures may be profitably applied These factors seem to be linked up with the previous history of the field, nature of herbage plants and rainfall. Where the land normally produces strong growths of clover, or has recently carried a good growth of clover, the response of stubble-grown cereals to super-ammonia mixtures will certainly be disappointing Although there is no definite exeprimental data on the rainfall question, it is reasonably sure that profitable responses to nitrogenous fertilizers will not be generally obtained in areas receiving less than 17ins. annual rainfall, except perhaps on a few barren sands. The average rainfall for Balaklava is approximately 15½in. per annum, which figure has not been reached now for the past 7 years. Moisture deficiency on stubble lands would therefore become a limiting factor before anything more than very small amounts of sulphate of ammonia, if any, per acre. The district is also capable, when conditions are right, of producing quite good growths of burr clover. One of the main factors in developing this clover is superphosphate. As sulphate of ammonia is approximately

three times as expensive as superphosphate, and as the average amount of superphosphate applied per acre is considerably below the optimum, it would be far more economical to overcome the nitrogen question by spending the extra money on superphosphate and growing clover. Many farmers have been sowing the same weight or even less of super-ammonia mixture per acre than they did previously with superphosphte. This is applying nitrogen at the expense of superphosphate, and may give a greener looking crop, but certainly not a better one economically.

After studying agricultural conditions in this district for almost four years, I feel sure that our major difficulties are not going to be overcome with super-ammonia mixtures. Our chief problem is overcropping, which has been responsible for a greatly decreased fertility level on many farms, and an increase in the incidence of Take-all disease. Take-all rarely occurs on fertile soils, because under these conditions soil bacteria are present in large enough number to exert a definitely antagonistic effect upon the Take-all fungus. Many farmers in the district are, however, definitely "wheatsick" and show considerable evidence of Take-all. The first and most important care for the district generally, is the widening of the rotation and the growing of more crops for "feeding off" rather than for grain crops.

The type of grain grown for feed is, comparatively, of little importance. Barley, on account of its quick growth in the early stages is a favourite, but as barley only tends to increase Take-all, oats should be substituted if possible. For the past three or four years I have been trying to encourage the adoption of W.A. white peas as late feed. These not only provide a good topping for lambs, but also considerably increase the soil nitrogen and organic matter level. They have definite possibilities in this district, and if generally grown they would certainly make super-ammonia mixtures a most unprofitable proposition. (Secretary, F. J. G. Collins.)

THE WORK OF FARRER.

In the course of a paper dealing with the above, read at a meeting of the Monarto South Branch on 17th August, Mr. L. W. Hein stated:—"In the eighties and nineties of last century, when the rust scourge was ruining wheat-grower's prospects in Australia and taking toll of crops to the tune of £2,000,000 per annum, conferences were held annually between 1890 and 1896 for the purpose of seeking methods for the control of the menace. Farrer was not invited to the first conference, but a paper specially prepared by him was read. He attended all the subsequent conferences, ultimately becoming the dominant personality, which no doubt lead to his appointment as Wheat Experimentalist to the New South Wales Department of Agriculture.

Soon after Farrer's appointment many new varieties of wheat appeared, among which were Bobs, Jonathan, Federation, Theo, and Comeback. All these soon found favour with wheatgrowers, each having been designed to suit certain climatic conditions and at the same time being more disease-resistant than the varieties previously grown.

It was Farrer's aim to extend the wheat areas further into the low rainfall lands of Australia, and Federation became famous between 1900 and 1908, because of its inherent properties of yielding satisfactorily under adverse weather conditions. Federation has been credited with adding increased wealth to Victoria to the extent of £250,000 in one season alone.

Prior to 1900 hard wheats and strong flours were regularly imported from Canada and U.S.A. to assist bakers in making satisfactory bread, but Farrer's strong-flour varieties rectified this. In connection with Comeback, Farrer was singularly fortunate in evolving early in his experiments a white wheat that was regarded by local and overseas authorities as the strongest white wheat known in any part of the world, and although it has been regarded by some as a shy yielder, it is still a favourite with many growers in all our wheat States, and in milling tests it is outstanding for its baking qualities.

Although Farrer died in April, 1906, it is interesting to recall that in 1933, when entries were invited for the World's Grain Exhibition at Regina (Canada), of the 56 entries of wheat collected from the wheatgrowers of the whole Commonwealth, all but one of the 29 prizes in the white wheat section, including the grand championship for white wheat—won by Mr. Jack Eade—went direct to "Farrer" wheats, or to crosses from his fixed strains. Farrer found our wheat industry more or less a sideline and in despair: he lifted it to be a thriving industry of great national value to the Commonwealth. Wheat breeders have not followed the example set them by Farrer. Their only objective has been to produce wheats of high yielding qualities, irrespective of their milling qualities. If our wheat does not come up to the required standard, our overseas markets will be lost, at a great cost to the producer. The most practical method appears to be the system of buying wheat according to grades. If that were done our wheats would be greatly improved, and a much more ready market would be

found. It is better to grow a high milling wheat and be prepared to expect a lower return than to continue growing a high yielding wheat of a lower test and perhaps lose our overseas markets." (Secretary, C. F. Altmann.)

WHEAT VERSUS SHEEP.

In the course of a paper read at the Taragoro Branch meeting held on 8th August, Mr. J. Crooks took for example a cleared and fenced farm of about 1,200 acres, and dealt first with the returns from wheat growing. By sowing 300 acres to wheat and 300 to oats, with 300 to fallow and 300 left as grass land, it would be found that 10 horses would be sufficient to work the land. Good fallow should return 3 bags of wheat per acre, while oats sown to stubble land should return 3 bags per acre. 75 acres would give the required amount of hay, and would leave 225 acres of oats to reap as grain. The income (on last year's prices) should be as follows—

REVENUE.

	£	s.	d.
300 acres of wheat, 3 bags per acre, at 2s. 4d. per bushel	315	0	0
225 acres of oats, 3 bags per acre, at 1s. 3d. per bushel	126	11	3
Total ..	£441	11	3

and 75 acres at 1 ton per acre would produce 75 tons of hay.

EXPENDITURE.

	£	s.	d.
Superphosphate 19 tons at £4 14s. per ton (wheat 90lbs. and oats 45lbs. per acre)	89	6	0
Seed wheat at 1 bushel per acre at 2s. 4d. per bushel	35	0	0
Seed oats—1½ bushels per acre at 1s. 3d. per bushel	28	2	6
Cornsacks at 7s. 6d. per dozen	28	2	6
Second hand bags for oats at 4s. per dozen	11	5	0
Binder twine—2 bales	5	0	0
Sewing twine	0	12	0
Shares for plough and combine	2	5	0
Depreciation of plant valued at £530	53	0	0
Depreciation of farm team valued at £200	20	0	0
Wages for one man for harvest and seeding—14 weeks at 25s. ..	17	10	0
Total ..	£290	13	0

	£	s.	d.
Income	441	11	3
Expenditure	290	13	0
Difference	£150	18	3

Leaving £150 18s. 3d. at the disposal of the wheat farmer.

Sheep Farming.—To get the best results from sheep farming it was necessary to study the carrying capacity of the land and the methods to increase it. To increase the carrying capacity it was necessary to topdress the natural pasture and cultivate at intervals; also to sow a small area of cereals such as barley, rye, oats or wheat for ensilage or hay, so the ewes could be handfed during the summer, when feed became scarce. To increase the revenue, one could produce fat lambs for marketing. By topdressing in the winter and handfeeding in the summer with proper care and attention it would be reasonable to expect an 85 per cent. to 90 per cent. lambing. On a farm of about 1,200 acres under such a system it should be possible to carry 600 ewes, and during the winter, 510 lambs for about 6 months, when they should b. ready for market. With wool at 9d. per lb., 600 4-tooth ewes should be worth 10s. per head, off shears. For that number 12 rams would be necessary—preferably of British or Corriedale breed at £3 3s. per ram. The returns should be as follows:—

REVENUE.

	£	s.	d.
600 ewes cutting 10lbs. per sheep at 9d. per lb.	225	0	0
85 per cent. lambing—510 lambs at 11s. per head	228	10	0
Total ..	£453	10	0

EXPENDITURE.

	£	s.	d.
Interest on outlay for ewes and rams	16	18	0
Cost of super 45lbs. per acre	61	2	0
Seed oats, barley and rye	13	17	6
Binder twine	5	0	0
Woolpacks, 20 packs at 4s. each	4	0	0
Branding oils, dips, etc.	5	15	0
Cost of shearing	9	10	0
3 per cent. death to breeding	9	0	0
Depreciation to plant necessary for cultivation, etc.	44	5	0
Total ..	£169	7	6

	£	s.	d.
Income	453	10	0
Expenditure	169	7	6
Difference	£284	2	6

Leaving £284 2s. 6d. at the sheep farmer's disposal as against £151 4s. 3d. at the wheat farmer's. (Secretary—T. Winters.)

THE FARM TEAM.

At the annual meeting of the Brentwood Branch held on 12th July, Mr. C. H. Boundy read a paper "Breeding and Care of Horses," in which he stated that for a sire the new class of Clydesdale was to be preferred. He should be of quality to be registered in the stud book. In selecting a stallion the first points to look at were the feet and legs. A good clean leg was necessary, with not too much hair and with a fairly flat bone measuring about 11 inches, and standing in a little on the hocks, in order to give the horse a more even balance when pulling. The walk was important. A horse should have a good, clean, active walk.

By breeding always from such a sire the type of young horses would soon improve, even if the mares were not of the highest standard. It was a sound investment to buy a good mare of a similar type to the sire, but not quite so tall, and a little finer and more feminine. Farmers were often lax in caring for farm horses. Many farmers thought that only show horses should be groomed down every morning, but the horses that were working in the dust all day were the ones that required grooming. A horse that was well groomed would keep its condition far better than one that was not. Horses should be well stabled, and not kept in a draughty stable, because horses coming in hot from the paddock and standing in a draught were likely to contract pneumonia. They should be fed regularly and always be watered before feeding.

The brood mares should have a small paddock to themselves so that they could be watched. By so doing one could quite often save a foal from smothering, and could be of help to the mare in case of complications.

It was a sound idea to drench all horses, young and old, once a year with 1 bottle of Raw Linseed Oil and 2 tablespoons of Turpentine per horse. (Secretary, J. H. Boundy.)

At a meeting of the Yadnarie Branch held on 17th July, Mr. K. R. Kobelt read a paper entitled "Management of the Farm Team." He said that a tandem pull was the best, because it was easier to handle, a team of 10 horses abreast being too wide. It did not pay to overload the horses; an extra horse or two would enable them to walk without straining. A horse that was fast should have a long pair of chains, while the chains of a slow horse should be shortened by knotting, so that each horse would take his share of the draft. In working a freshly broken horse it was advisable to carry a whip on the implement, and if the horse was seen to be loafing the whip should be used. If that were not done such a horse would develop a habit of slow walking. In working horses that had been spelled for a long period, especially if they had been on greenfeed, an occasional spell was needed for the first few rounds; the team would settle down to its usual pace in a short time. A team should not be allowed to trot around corners, because of the danger of the horses treading on one another's feet. Care should be taken in handling

the reins. A steady pull was all that was required. The reins should never be jerked, because such a practice caused the team to throw up their heads and made it difficult to guide them. Horses kept their condition better if they were worked early in the morning rather than late at night. Horses worked after sundown came in wet with sweat which would not be dry by morning. (Secretary, E. A. Spriggs.)

SORE SHOULDERS.

At the annual meeting of the Wolseley Branch, on 8th July, members discussed the fitting of collars to prevent sore shoulders. Mr. J. E. K. Ridgway advised using salt water to wash the shoulders of young horses. Mr. W. W. Merrett believed in bluestone water for hardening shoulders. Mr. Pilgrim used Neatsfoot oil on tender-skinned horses. Mr. V. M. Oborn advised taking the horses easy when commencing to work and feeding oaten chaff. Mr. E. R. Thiele washed his horses shoulders with warm water and soap, using alum for sores. Mr. E. W. Sharrad advised working horses quietly for say the first week; overworking was the cause of sores. The hand should be run down the shoulder before fitting the collar. Horses should not be worked with wet shoulders. Time should be given to accustom them to their food. Mr. G. D. Butler stated that hames were often the cause of sores on shoulders. He exhibited a pair of steel hames 6in. wide, which he said prevented sore shoulders. (Secretary, E. W. Sharrad.)

THE SHEEP DIP.

The above was the subject of the following paper by Mr. D. C. Harvey at the monthly meeting of the Hartley Branch on 14th August:—There are several types of dips used, and perhaps the walk-in dip is the quickest and easiest type to construct. The place selected to build a dip should be on the slope of a hill, though by no means too far up the slope. Dig a hole about 50ft. long, 3 ft. wide, and 5ft. to 6ft. deep, and gradually slope the last 10ft. for the exit for the sheep to walk out, thus making a total length of 60ft., and giving the sheep a swim of a little over 50ft. Build a good solid stone wall on both sides of the dip from bottom to top, leaving a width of about 16in. from wall to wall. Cement the wall 1in. thick. When cemented there will be a space 14in. wide between the walls for

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the sheep to swim through. A well about 18in. deep by 2ft. by 18in. should be made at the end where the sheep come out. This should contain a sieve into which the water from the draining pens will flow. The well can be covered with a wooden cover. A 3in. pipe should be laid from the bottom of the well to the bottom of the dip, passing under the slope where the sheep walk out. This pipe carries the water right into the bottom of the dip, thus avoiding damage being done to the exit by water rushing over the steps or grips for the sheep's hooves. A platform at the end where the sheep enter the dip made of suitable timber and running out above the water for 4ft. or 5ft. and 3in. above the water prevents any splash from the backwash made by the sheep going through the dip. It is the splash that stops the sheep from running. It is necessary to have a framework extending about 12ft. along the walls at the end where the sheep enter, in order to prevent the sheep jumping. *Yards.*—A large yard made of good timber should be erected. From this there should be a yard large enough to hold about 100 sheep. From this yard a small gate should open into a pen holding about 20 sheep. This pen should have a race to the mouth of the dip, about 8ft. long and just wide enough for a sheep to run through comfortably. *Draining Pens.*—These should have a fair slope and should be roomy and large enough to hold 200 to 250 sheep when full. Build the pen with a division in the centre. Erect a good, solid post at the edge of the well, which should be directly in front of the exit of the dip. A gate should be fitted to this post so that it can be swung to shut off either side of the division in the drainage pen. There should also be a gate at the upper end of the pen, so that half-drained sheep can be turned into the other side and left there to drain thoroughly before being turned out. The draining pen should have a good cement floor and a cement wall about 3in. high around the edge to prevent any water from escaping. The sides of the dip should be level with the ground. A lid of timber could be made, and when not in use the dip could be closed, thus avoiding sand and rubbish drifting in. It is possible to dip 250 to 300 sheep per hour in a dip of this type, providing the draining pens are sufficiently large. (Secretary, W. John Brook.)

PRACTICAL HINTS.

At a meeting of the Warramboo Branch held on 12th July, members supplied and discussed various hints, among which were the following:—Sew a piece of 4in. thin leather right around the drenching bottle, leaving about 1in. above the bottle. This minimises the danger of animals biting and swallowing pieces of bottle. *Mending small leaks in water pipe.*—Materials required: One small piece of rubber, slightly larger than the leak and one piece to just fit the pipe, a clamp 2 inches wide and U-shaped to fit the pipe, made out of a piece of petrol drum, and having holes to take ¼in. or ⅜in. bolt. Place the small piece of rubber over the hole, then the other piece over it and around the pipe. Slide the clamp over the rubber and screw up tight, having the bolt opposite the hole in the pipe. *Leaking tank.*—When a tank shows signs of a leakage clean the part and brush over it with paint. Then stick on a new piece of calico, paint again and stick on another piece of calico. Finally brush again with paint. *An easy way to destroy rabbit burrows.*—Stand over the hole and drive a crowbar through the roof, then step back a few inches and drive in the bar again in another place. Continue until the hole is thoroughly broken in. (Secretary, H. F. Chilman.)

FARM ECONOMY.

The subject of the monthly meeting of the Marama Branch held on 16th August, was a paper entitled "Farm Economy" by Mr. W. S. Gray, who stated that present conditions made it necessary for farmers to economise. Economy did not mean sowing a smaller acreage or using less super per acre. Such action would be false economy. True economy lay in such matters as placing machinery under cover instead of leaving it exposed to the weather which soon did as much damage as the machine received while working. If no shed were available a covering of straw would be of value. Driving chains on machines soon became worn and caused much trouble by jumping off. The links could be bent by placing the chain on an anvil or flat piece of iron, with the surface of the chain which ran on the sprockets upwards, and placing a piece of ¼ or ⅜in. round iron across the centre of the link and striking it with a hammer, thus causing it to bend and shorten. The writer preferred the above method to closing the

hook. The life of harness would be prolonged if it were dressed regularly with neatsfoot oil. Oiling machinery was important; a few shillings spent on the purchase of a good oil feeder might save pounds in bearings and loss of time. It did not pay to use cheap oils. They had not the lubricating qualities of good oils and were usually thin, and thus ran out of the bearings very quickly. Keeping an assortment of bolts and nuts on the farm might save much travelling and loss of time in replacing a broken bolt. A supply of scrap iron would be useful when repairs were needed. Secretary, Thos. C. Kinkley.)

VERMIN DESTRUCTION.

At a meeting of the Brownlow Branch on 17th July, Mr. R. Smith, in the course of an address, stated that in the settled areas the most effective method of destroying rabbits was by digging them out wherever possible. Where digging was not possible, trapping and fumigating should be done. Digging out was preferred because the burrows were destroyed as well as the rabbits. The few rabbits (especially the does) that escaped had no burrows to hide in, and thus they were easily killed by dogs or guns. The above methods could not be used successfully in pastoral country, where poison carts were the only effective method of combating the pest. Foxes could be destroyed in a similar way to rabbits, by digging them out wherever possible. A fox would not take a bait as readily as would a rabbit. The best bait for strychnine poisoning was the head of either a rabbit or a fowl, or a piece of caul fat. Such baits buried on a trail made by dragging a heavy object along the ground at a place where foxes were known to prowl during the night *Blowfly*.—The use of fly-traps was recommended. There were two species of the bluetail fly, one known as the primary fly and the other as the secondary fly. The committee investigating the control of blowflies had concluded that the primary fly was responsible for the initial striking of sheep. The strike of the primary fly attracted the secondary fly, which caused the affected area to spread and become more serious than a bad primary strike. The primary fly was not caught in the traps in any great numbers, but even if only secondary flies were trapped an immense amount of good would be done, because the secondary fly caused the greatest damage. In order to be effective, fly-trapping had to be a united effort on the part of all concerned. Destruction of all carcasses should not be neglected, because they were the breeding ground of blowflies. (Secretary, A. R. Steinborner.)

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FARM BUILDINGS.

The following paper was read by Mr. B. A. Koch before a meeting of the Kilkerran Branch on 12th August:—At the present low price of wheat and the high price of building material it is almost impossible to do any building on a farm, and where extensive buildings have been erected some years ago it is impossible to keep them in repair, as all iron roofs need renewing every 20 or 30 years in this district, close to the sea, and this is a very big item with iron about £25-£26 a ton. This is the reason why so many farmers are seen with only a hut for the farmer and his family to live in with no conveniences such as electric light, gas stoves, deep drainage, etc., which city people enjoy. The construction of a house should be the first consideration of the farmer. Here, he must go according to his pocket or bank book. If a modern dwelling is to be erected an architect should be consulted to draw a plan with detailed specifications. The plans must be all drawn to scale so that the builder can take all measurements from the plan. All pipe inlets and outlets should be planned beforehand, this being done the farmer should get an estimate of the cost to see that it will not cost more than he can afford, he will also have to decide whether to build with stone, mason work, reinforced concrete, or bricks. I would recommend stone walls for outside, if stone is available, and bricks for inside walls. Stone walls are cooler than concrete and also cheaper to erect where good stone can be got at a reasonable distance. On the other hand where the subsoil consists of clay, concrete would be the best, as stone walls usually crack very much in such places. A good solid concrete foundation should be put in. If there is any clay subsoil the foundation should be reinforced with steel rods; also a reinforced concrete course should be placed right around the building just above the windows. This will prevent cracked walls to a great extent. In all cases a good damp course should be placed on the foundation to prevent damp from rising up the walls. About 12 to 18in. of the outside wall should be plastered with cement at the bottom, this prevents magnesia creeping up the walls on the outside. Roofing iron should be painted between the joints with "Killrust" paint. This will prevent rusting at the joint to a great extent, this being a great problem in this district. Fibrous plaster is about the cheapest and best material to use for the ceilings, with wood cover-moulds. For inside plastering a good coarse sand should be used, with a good set coat for the finish, except for the kitchen, bath, and dining rooms. These should be plastered with cement, with a finishing coat of "Victor Hard." If done properly this makes a very hard and smooth surface. Water should be laid on to the kitchen, bathroom, and washhouse. The washhouse should be as close to the kitchen as possible and should be equipped with washtroughs, sink, and washing machine. The wash copper should not be inside the washhouse, as the steam makes it very unpleasant and unhealthy for working. It should be placed under a verandah just outside the washhouse. The motor garage should be built close to or joined to the house, so that it is unnecessary to go outside to get into or out of the car. This is very convenient in wet weather, and for transferring parcels to and from the car. Floors in the house should be of wood, except in the bathroom and washhouse, which should have concrete floors. Sheds and out-buildings should be constructed on similar lines with iron roofs. Shed doors should be wide enough to admit all big machines, and high enough to admit high loads. Implement shed and blacksmith's shop should be close together, so that repairs to machines can be done at any time without moving the machines, thus preventing waste of time in walking from one shed to the other. Where an extensive amount of blacksmithing is done the blacksmith's shop should be partitioned off from other machines as otherwise a lot of soot will collect on the machinery. The barn for storing seed and super should have a raised platform about 3 to 3½ft. high. This if large enough will save a lot of lifting, as loading and unloading can be done with sack trucks. A good stable should be provided for horses and built of stone with an iron roof. The chaff shed should be joined to the stable at about the middle to save carrying the chaff any great distance. The stables should be open to the north or north-east. Implement sheds should be of similar construction, and closed with sliding doors. The general practice of fitting sliding-door wheels to the bottom of the doors is wrong, because dirt and dust blow into the bearings and make the door hard to open and close and the wheels soon wear out. If they were fitted to the top not so much dust would collect and the doors would move much more easily. If cows are kept a shed should be provided for them to be fed in; this should also be near the chaff shed. The milking stalls should have a concrete floor and bails that can be worked from the back of the cow.

Points from Discussion.—Not advisable for motor garage to be under the same roof as the dwelling-house, on account of the risk of fire occurring in the motor garage. Expense did not warrant the engaging of an architect for an ordinary farm dwelling. Most timber mills provided plans and specifications. (Secretary, A. Sawade.)

PRUNING THE ORANGE TREE.

Mr. F. Lewis was responsible for the above subject at a meeting of the Ramco Branch held on 12th August. Mr. Lewis said there were hundreds of acres of citrus trees, very few of the owners of which had any idea of how to prune them. It was the usual practice to let them go for a few years, except to cut out any limb which grew straight up or was in the way. It was easy to grow oranges the first 10 years, but after that time the trouble commenced. By then they would be full of dead wood and it would be a very difficult job to remove a mass of dead wood and crossed limbs. However, an orange tree was one of the easiest trees to prune. It was first necessary to start from the butt and clean out all the dead wood, and then start pruning. It would be seen that the fruit was heavy but the limbs were pliable, so that all limbs grew outward and upward, but the heavy fruit dragged down the limb causing it to bend. A shoot grew out of the bend, and that went on year after year. It was obviously necessary to cut off the portion beneath the limb, *i.e.*, the spent wood. The limb brought down nearest to the butt had the most spent wood. Watershoots were wild growths that grew straight upwards, and if they bore fruit they were weighed down and produced cross limbs. The main trouble in pruning was to know how much spent wood to remove. Some growers took from the butt right to the end of the limb, while others removed only a percentage. Pruning should be done from the butt outwards. Where shoots were level it was possible to tell the old ones; they were dark and the new shoots were lighter in colour. (Secretary, J. J. Odgers.)

THE AGRICULTURAL BUREAU.

At the annual meeting of the Buchanan Branch held on 28th August, Mr. W. G. Hucks read a paper "Suggestions for Improving Future Meetings," in the course of which he referred to the information they had received from past meetings, from addresses by departmental officers and from the *Journal*. The Bureau had helped to bring about better farming practices by means of competitions, &c. The value of the social side of the Bureau should not be overlooked. An improvement in the meetings could be brought about by interchange of visits with other Branches. An occasional debate would also be of value. (Secretary, W. G. Hucks.)

OTHER REPORTS RECEIVED.

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
			SOUTH-EASTERN DISTRICT.	
Mundalla	31/7/35	16	Annual Meeting	A. Ross
Millicent	31/5/35	9	"Fat Lamb Raising"—K. K. Skeer	L. C. Hutchesson
Millicent	29/6/35	8	"Improvement of Second Grade Land"—H. J. Hutchesson	L. C. Hutchesson
Millicent	19/7/35	8	Annual Meeting	L. C. Hutchesson
Allandale East .	8/8/35	10	Discussion	R. T. Laslett
Tantanoola	10/8/35	9	Discussion—Agricultural Bureau Constitution	L. J. C. Osborne
Mundalla	13/8/35	15	Address—S. Shepherd ...	A. Ross
Kybybolite	13/8/35	26	Veterinary Questions	A. S. Shepherd
Rendelsham ...	10/8/35	8	"Strawberry Culture"—F. R. White	F. Todd, jun.
Mount Gambier	14/7/35	16	Annual Meeting	J. E. Morphett
			LOWER NORTH DISTRICT.	
Penwortham ...	24/7/35	14	Annual Meeting	A. R. Jenner
Alma	9/7/35	10	Address—W. C. Johnston	E. H. Drescher
Hanson	9/8/35	—	Woolclassing Demonstration—C. A. Goddard	M. de N. Lucas
Hanson	13/8/35	22	Discussion of Show Exhibit	M. de N. Lucas
Rosedale	12/8/35	15	"Fencing"—A. Muegge .	W. E. George
Light's Pass ...	12/8/35	30	"Finance"—F. Bergstrom	C. A. Verrall
Koonunga......	14/8/35	—	Annual Social	H. Mibus
Black Springs ..	12/8/35	18	Address—S. McNamara .	K. H. Dunn

OTHER REPORTS RECEIVED—*continued.*

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
		LOWER NORTH DISTRICT—*continued.*		
Truro	19/8/35	15	"Fat Lamb Raising"—W. E. Scott	L. S. Davis
Wasleys	15/8/35	23	"Requirements of the Soil"—Dr. A. R. Callahan	C. R. Currie
Stockport	16/8/35	14	Address—W. C. Johnston	Ralph V. Koch
Tarlee	26/8/35	25	Address—Prof. J. A. Prescott	N. L. Clarke
		MID NORTH DISTRICT.		
Mount Bryan	27/7/35	6	Formal	A. A. Jefferies
Narridy	3/8/35	18	Address—E. L. Orchard	J. Klingner
Wandearah	13/8/35	34	Wool Demonstration—C. A. Goddard	L. A. Jacobs
Redhill	13/8/35	6	Question Box	L. Harris
Beetaloo Valley	12/8/35	14	"Income Tax Returns"—Mr. Marchland	B. W. Giddings
Booborowie	26/8/35	5	"Income Tax Returns"—F. C. Catt	A. T. Fairchild, jun.
		UPPER NORTH DISTRICT.		
Yandiah	25/7/35	—	Woolclassing Demonstration—C. Goddard	E. Keller
Yandiah	30/7/35	14	Annual Meeting and Social	E. Keller
Appila	8/8/35	19	Visit to Laura Mill—"Pelschenke" Test Demonstration	E. W. Wurst
Wilmington	13/8/35	23	Address—J. O. Hatter	Chas. Cole
Eurelia	14/8/35	—	Address—R. Lock	E. P. Wall
Morchard	9/8/35	10	"Back to the Land"—H. Tilbrook; "The Sheep Dog"—R. McCallum	E. Tilbrook
Baroota	12/8/35	15	Address and Wool Demonstration—C. A. Goddard	E. W. Hulster
Booleroo Centre	26/8/35	8	Addresses—F. C. Richards and J. O. Hatter	J. J. McCarthy
Murraytown	17/8/35	16	Annual Meeting	E. B. Pitman
		YORKE PENINSULA DISTRICT.		
Boor's Plains	1/8/35	20	Annual Meeting	S. G. Chynoweth
South Kilkerran	5/8/35	23	"Crop Competitions"—E. H. Dutschke	R. E. Hasting
Paskeville	13/8/35	12	"Correct Seeding and Seeding Implements"—Mr. East	J. Prouse
Weavers	5/8/35	11	Homestead Meeting and Discussion	H. W. Cornish
Bute	15/8/35	9	Discussion	H. G. Perry
		WESTERN DISTRICT.		
Goode	17/7/35	8	Annual Meeting	Ben. A. Linke
Miltalie	27/7/35	10	Annual Meeting	S. D. Ramsey
Koppio	31/7/35	14	Thirtieth Annual Meeting	M. T. Gardner
Kelly	3/8/35	17	Discussion—"Sand Drift"	F. R. Illman
Petina	16/7/35	12	Annual Meeting. "Treatment of Wounds"—H. H. Howard and W. Brownrigg	W. E. Stone

OTHER REPORTS RECEIVED—*continued.*

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
			WESTERN DISTRICT—*continued.*	
Butler	23/7/35	9	Question Box	C. F. Jericho
Laura Bay	9/7/35	18	Annual Meeting	P. S. Morrison
Kyancutta	6/8/35	13	Annual Meeting	E. A. Kelly
Palabie	7/8/35	9	"Pig Raising"—S. North	E. H. Rashleigh
Green Patch	8/8/35	10	Appointment of New Members	C. J. Whillas
Balumbah	13/8/35	9	"Outstanding Dis-advantages"—T. V. Wright	J. E. Swann
Mount Hope	13/8/35	13	"Tree Culture"—J. H. Vigar	J. L. Vigar
Wallala	7/8/35	11	Formal Report	C. F. Zippel
Chandada	13/8/35	10	Discussion	H. J. Chewings
Pinkawillinie	15/8/35	7	"Sheep and Wool"—F. T. Freeth	L. F. Freeth
Pygery	13/8/35	9	"Agriculture on E.P."—E. Edmonds	A. Day
Laura Bay	13/8/35	12	Discussion—"Goyder's Rainfall Line"	P. S. Morrison
Ungarra	12/8/35	15	"The Horse"—J. Duffield	W. G. Gordon
Chilpuddie Rock	14/8/35	10	Discussion	H. Brown
Oungena	1/8/35	10	Discussion—"Wheat Commission Report"	A. A. Voumard
Butler	20/8/35	11	Annual Meeting	C. F. Jericho
Maltee	8/8/35	15	First Aid Demonstration and Paper—H. Box	E. Schwarz
			EASTERN DISTRICT.	
Berri	24/7/35	—	Annual Meeting	E. J. R. Johnson
Coonalpyn	14/8/35	30	Debate—"Disc *v.* Mouldboard Plough"	Chas. C. George
Berri	27/8/35	—	Citrus Pruning Demonstration	E. J. R. Johnson
Pinnaroo	12/7/35	20	Discussion	H. L. Badman
Pinnaroo	7/8/35	160	Social Evening	H. L. Badman
Pinnaroo	22/8/35	21	Annual Meeting	H. L. Badman
			SOUTH AND HILLS DISTRICT.	
Longwood	13/7/35	9	Discussion—"Grasses Suitable for the District"	H. G. Haines
Monarto South	20/7/35	18	Formal Report	C. F. Altmann
Lenswood and Forest Range	29/7/35	10	Question Box	B. F. Lawrance
Hope Forest	1/7/35	8	Social Evening	H. J. Hunter
Hope Forest	5/8/35	12	Formal Report	H. J. Hunter
Springton	7/8/35	6	Discussion	E. Brokate
Yundi	31/7/35	13	Addresses—V. F. Gameau, C. F. Anderson	T. R. Smart
Cherry Gardens	15/6/35	13	"Some Changes in this District"—Hy. Jacobs	A. R. Stone
Cherry Gardens	9/8/35	39	Address—Adelaide Chemical Co.	A. R. St ne
Hartley	14/8/35	8	"The Sheep Dip"—D. C. Harvey	W. John Brook
Frayville	15/8/35	14	"Milling Wheats"—K. McLean	H. H. Ramm
Blackheath	15/8/35	10	Questions	E. H. Paech
Currency Creek	5/8/35	12	Annual Meeting	D. Jeff. Gordon
Currency Creek	19/8/35	13	"Home Tanning"—L. Collett	D. Jeff. Gordon

WOMEN'S BRANCHES.

SUBJECTS FOR BUREAU MEETINGS.

If you have no other subject in mind, here is a list from which you might choose when asked to contribute to your branch programme.

The Farm.	*The Home.*	General.
Dairying—	Home Management—	Inter-Branch Visits
Care of Milk and Cream	Furniture—	Competitive Exhibition
Buttermaking	Choice	Flower Show
Cheesemaking	Repairing	Practical Demonstrations
Pigs—	Needlework	Social
Bacon Curing	Knitting	Music in the Home
Beekeeping—	Rugmaking	Good Reading
Honey	Clothing—	Hobbies
Horticulture—	Choice	Physical Culture
Vegetable Growing	Repairing	Labor Saving Hints
Flower Growing	Dressmaking	Spring Cleaning
Poultry—	Pattern Afternoon	Entertainment in the Home.
Dressing	Children—	
Incubation	Care and Management	
Rearing Chicks	Cooking—	
Turkeys	Recipes	
Ducks	Recipes for Christmas	
	Lunches	
	Jam Making	
	Fruit Preserving	
	Fruit Drying	
	Fruit, Value of	
	Pickles and Sauces	
	Sweet Making	
	Exhibition of Home Crafts	
	Christmas Gifts	
	Home Nursing	

PINNAROO LINE BRANCHES, LAMEROO, 8th AUGUST.

This year's Conference of Pinnaroo Line Branches was held at Lameroo on 8th August, under the auspices of the Wilkawatt Branch. Mrs. H. L. Billing (Wilkawatt) presided and about 90 delegates were present from the Parrakie, Parilla, Wilkawatt, Parilla Well, and Pinnaroo Branches.

Mr. A. J. A. Koch (Member of the Advisory Board of Agriculture) addressed the gathering, and congratulated the Women's Branches on the progress they were making.

Miss E. Campbell gave a very interesting address on "Suggestions for Home-Made Inexpensive Christmas Gifts," and displayed a number of dainty and simply-made gifts from such every-day materials as old straw and felt hats, old millinery flowers, kid gloves, odds and ends of cretonne, silk, linen, and voiles, old discarded crockery decorated with fancy paper and made attractive. Even the old binder twine from the chaff shed had its use among the gifts.

Mrs. H. L. Billing gave an address entitled, "Suppose We Laugh," and quoted extracts from "The Optimist."

Sister Ashton, of the Lameroo Hospital, read a paper, "Infectious Diseases," and gave some helpful advice to the home nurse in taking precautions to check the spread of infectious diseases.

Papers, "Gelatine and Its Uses" and "Dried Fruit Recipes," were read by Miss J. Mattiske (Pinnaroo) and Mrs. A. Sumsion (Wilkawatt).

The Parilla Branch displayed several very handsome hook rugs, the work of Mrs. Seidel.

Mrs. J. Steer and Mrs. E. Altus (Wilkawatt) gave a demonstration of boning a fowl before cooking and exhibited a gelatine of fowl prepared in a similar manner. The following papers were read and discussed.

RECIPES FOR THE USE OF DRIED FRUIT.

[Supplied by Mrs. A. YOUNG, Pinnaroo.]

Apricot and Lemon Marmalade.—Ingredients: 1lb. dried apricots, 1lb. lemons, 5 pints boiled water, 5lbs. sugar. Method: Wash apricots, put into a bowl and pour on boiled water and leave to soak for 24 hours. Cut lemons and soak in some of hot water. Let stand to soak for 24 hours. Boil lemons a little before adding apricots, boil until tender, add sugar, and boil about ¾ hour.

Apricot and Pineapple.—Wash and soak 1lb. of apricots for 48 hours in 6 breakfast-cupfuls of water. Procure a small tin of pineapple, and after cutting it into small pieces, put it and the juice of the pineapple with the apricots. After steeping the apricots, cut them up. Put all into a preserving pan, not forgetting the water in which the fruit has soaked. Allow to boil for half an hour, then add 3½lbs. of sugar and boil for 25 minutes longer.

You can use apricots, nectarines, pears, apple rings, or peaches for the following recipe:—To every pound of dried fruit allow 3 pints of water, 3lbs. of sugar, 1oz. of sweet almonds (blanched and chopped in half). Wash the fruit well and put it to soak in the water for 2 days. Simmer gently until tender, then add the sugar (warmed) and the almonds. Boil for half an hour. Pot while hot and cover next day.

Apricot Sponge.—Cook ½lb. dried apricots (washed and soaked) with 1 pint water. Add sugar to taste. Drain juice from fruit. Dissolve 2 dessertspoonfuls gelatine in ½ cup hot water and add to juice. When the mixture is thickening, add beaten whites of 2 eggs and whisk all well together until it is very thick. Set in a dish with a little dried fruit decorating it. Serve with cream and custard.

(Samples of each of these recipes were shown when paper was read.)

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SEVEN INVALID RECIPES MADE FROM ONE CHICKEN.

[Mrs. E. A. ALTUS, Wilkawatt.]

(Grilled chicken, 1 fillet of breast; roast chicken, 1 fillet of breast; steamed chicken, 1 thigh; fricasse chicken, 1 thigh; chicken romakins, drumsticks of chicken; chicken cream, scraps off breastbone; chicken broth, carcass and giblets.)

Chicken Broth.—Carcass and giblets, small piece of onion, 1 sprig parsley, 1oz. barley, 1½ pints water. Wash barley, put all ingredients into saucepan with a little salt, simmer for 3 hours, then strain.

Chicken Romakins.—Boil drumstricks; when cooked cut meat off and mix with 1 tablespoon cream, melt ½oz. butter and stir in ½oz. flour; mix with stock drumsticks were boiled in. Stir till thick, add chicken and little parsley. Grease some romakin cases, sprinkle with bread crumbs; put mixture in, sprinkle with breadcrumbs, put piece of butter on each and bake till golden brown.

Steamed Chicken.—Trim thigh, rub over with lemon, wrap in buttered paper; allow to steam for ½ hour or till tender, serve with parsley sauce.

Roast Chicken.—Fillet off breast, 2ozs. butter, chopped parsley, salt, lemon juice, wrap breast in buttered paper, and stand in fireproof dish, with half the butter, and cook for ½ hour; baste well. Mix remainder of butter with parsley, salt, and lemon juice, lift chicken out on to hot dish, spread the mixture over it, and serve.

Grilled Chicken.—Breast of chicken, 1 tablespoon butter. Have grill-iron hot, spread a little butter on breast, grill for 8 minutes, turn over every two minutes, and spread with butter. Put on hot plate and spread with butter, sprinkle with chopped parsley, pepper, salt, and lemon to taste, then serve.

Fricasse of Chicken.—Simmer other thigh of chicken in ½ pint water until tender. Melt ½oz. butter, stir in ½oz. flour until smooth. Add to stock and stir till boiling, cool a little, then stir in 1 egg well beaten and salt. Reheat and it is heady to serve.

Cream Chicken.—Scraps of meat off breast and body bones. Simmer in 1 cup of milk until tender, then add 1 dessertspoon cream, chopped parsley, pepper, and salt; thicken with cornflour and sprinkle with nutmeg. It is best to use broth first, as giblets will not keep as well as other parts.

FLOWER GROWING.

[MRS. IRELAND, Parilla Well.]

Make the garden at the north side of the house in order to receive as much sun as possible. It is best to have it a little on the slope so that water will not lie on it too freely in the winter months, and to form long narrow beds to facilitate picking the flowers.

There are many plants that can be planted in January, February, and March, to provide early winter and spring flowers. There are no blossoms more beautiful in a garden than Delphiniums with their rich shades of blue. Mignonette, Stocks, Gaillardias, Petunias, Sweet Sultan, Sweet Peas, Antirrhinums, Indian Pinks, Larkspur, Carnations, Scabious, Linaria, Verbena, and Marigolds are plants which will bloom almost all the year with plenty of water and a little attention.

Pansies and Violas are very attractive and are easily grown. Antirrhinums are very showy, and are always in bloom, but they do not last long. Perennial Aster is a very nice flowering plant for autumn; it is ideal for decorating and needs little attention. It should be cut down as soon as it has finished flowering. There are several spring flowering plants that can be grown with very little trouble; Poppies, Lupins, Cornflower, Godetia, Dianthus, Candytuft and Calliopsis.

The Carnation is a flower that almost stands alone for scent and beauty and is also a plant that will last for years.

The greatest enemies of the plants are rust and spot. This will be recognised by brownish-gray spots on the leaves. Pull off and destroy by fire any spotted leaves.

During rainy weather dust them once a fortnight with lime. These plants should be planted 18ins. apart and in rows about 2ft. apart. Afer flowering, pick off dead pods and any dead wood, but do not cut the bush back; this will spoil the bush for winter flowers.

Scabious need not be destroyed every year. It will keep crowing and produce nice blooms if manured. They can be planted in the same way as carnations and top-dressed with stable manure. Put a heap of horse or cow manure on the bed where the water can run all over the bed, and put the hose in the middle of the manure and turn the tap on. The garden soil should be kept dug, soft and free from weeds. It is a good plan to have more space than is wanted to plant in the garden, so that some of the soil will lie idle for a while. All bulbs should be dug up and stored in a dry place until it is time to plant them again.

A sprinkler is best for watering small plants, and this should be done in the morning before the heat of the day. If the ground is too hard, coat it with manure and drift sand; that will soften the soil and hold the moisture.

PICKLES, SAUCES, AND CHUTNEY.

The above was the subject of the paper read by Mrs. R. Lines at the meeting of the Gladstone Branch held on 16th July:—"Every housewife likes a stock of pickles and sauces on her cupboard shelf. Most of them are easily made and cheap compared with the bought article. Pickles and sauces are not regarded very favourably by dieticians, but are liked by practically everybody, and one can economise considerably by making a year's supply at home with fruit and vegetables grown in the farm garden.

Pickles have very little food value and eaten in large quantities can be harmful to digestion, but they serve a purpose in adding zest to all manner of foods, especially in summer time when appetites are jaded, besides providing frills to every-day fare.

Good sauces can be made from plums or apples, while the marrow or pie melon will form the basis of a number of delicious pickles and chutneys when cucumbers or cauliflowers are lacking. Firm, fresh vegetables and just ripe fruit that is picked on a dry day gives best results.

A home made vinegar is ideal for all kinds of pickles, but if using the purchased article, always use a good quality malt vinegar to avoid harshness. White vinegar gives a better appearance to clear pickles such as onions or cucumbers and it should always be used for preserves that are to be exhibited. Acetic acid sometimes recommended, is merely a substitute. All vinegars are diluted solutions of acetic acid. A copper pan can be used for jam making, but never on any account use copper for vinegar preserves. Fears concerning aluminium have been proved groundless and it is quite as good as an enamel-lined pan. Use a wooden spoon to stir for preference. Clear pickles are made by pouring spiced vinegar over salted vegetables, and mustard pickles by adding a mixture of flour, mustard, sugar, cayenne, and tumeric for colouring purposes, to the boiling vinegar and vegetables after they have been boiled 10 to 20 minutes.

The methods for making tomato sauce is to boil tomatoes, onions, and spices for perhaps an hour, strain, add other ingredients, and boil perhaps another 2 hours. Most tomato sauce recipes contain apples, and by mincing the apples it cooks to a mash quicker. A colander makes a good strainer, but if the seeds are not desired, strain again through net. Here is a good strainer:—Have a piece of wire gauze, nail it firmly to a box that has no top or bottom, or failing a box, 4 good pieces of board with the gauze tacked on would be the same. Have it high and large enough to stand over your basin, and then it is quite easy to do the straining.

Paper is an inadequate seal, but if it must be used, stick 3 thicknesses together with egg white or hot water starch. When dry, paste it securely over the jar. Then brush all over with melted paraffin wax for greater safety. If corks are used, dip first into wax or good clarified mutton fat, and push into bottles firmly. Or lay a piece of string across the mouth of the jar and then push in the cork. When the bottle is to be opened pull one end of the string and the cork will come out easily. Metal screw tops are liable to rust with pickles. To help prevent the rust, pour a little melted wax into lid and turn the lid until all crevices are coated. When set, screw down tightly, and the hot jar will melt the wax into all crevices and make the jar airtight. If the jars have become cold, screw on the waxed lids and dip into hot water which will melt the wax again. Then give an outside coating if necessary. If a recipe is altered always make a note of it for future reference, otherwise good fruit and vegetables may be spoiled.

Chutneys are easily made. They will cook while the dinner bakes and be ready to eat next day. A few pounds of fruit makes quite a lot of chutney. Yellow peaches, figs, apricots, sour cooking apples, ripe or green tomatoes, varied in different ways, makes a number of different chutneys. Any fruit or vegetable can be made into chutney. When a different flavour is wanted for a curry, try adding some chutney. Delicious sandwiches can also be made with chutney. Chutneys are meant to be sweet, but if a sour preserve is preferred, alter the quantity of sugar to suit the taste. Always taste the chutney about ½ hour before bottling so that if desired, any extra flavouring or spice will have time to blend with the other ingredients. After chutney has been kept for some time it is inclined to become solid. To remedy this, empty into a saucepan and add a little water until soft. Heat it slowly, continually stirring to melt the sugar.

Pickled Grapes.—Select dark, late grapes, pack into jars in small bunches. To each quart of vinegar add ¾lb. sugar, ¼ stick cinnamon, 1oz. whole spice. Boil and cool. When cold, pour on to the grapes, and put a plate on top to keep the grapes under the vinegar. Ready for use in 3 weeks.

Several other receipts were given by Mrs. Lines. (Secretary, Mrs. L. Sargent.)

INVALID RECIPES.

The following recipes were supplied by Mrs. E. Altus, of the Wilkawatt Branch, at the meeting held on 21st May, all of which can be made from the chicken:—

1. *Grilled Chicken.*—Breast of chicken, 1 tablespoon of butter. Have grill iron hot, spread a little butter on breast. Grill for 8 minutes. Turn over every 2 minutes, and spread with butter. Put on hot plate and spread with butter. Sprinkle with chopped parsley, pepper, salt, and a squeeze of lemon if liked.

2. *Roast Chicken.*—Fillet off breast, 2ozs. butter, chopped parsley, salt, lemon juice. Wrap breast in buttered paper and stand in fire-proof dish with half the butter and cook for ½ hour, baste well, mix remainder of butter with parsley, salt, and lemon juice. Lift chicken out on to a hot dish, spread the mixture over it and serve.

3. *Steamed Chicken.*—Trim thigh, rub over with lemon juice, wrap in buttered paper, steam for ½ hour or until tender, and serve with parsley sauce.

4. *Chicken Cream.*—Scraps of meat off breast and body bones—simmer in 1 cup of milk until tender, then add 1 dessertspoon of cream, chopped parsley, pepper, and salt. Thicken with cornflour and sprinkle with grated nutmeg.

5. *Fricasse of Chicken.*—Simmer other thigh of chicken in ½ pint of water until tender. Melt ½oz. butter, then stir in ½oz. flour, add this to stock and stir until boiling. Cool a little, then stir in 1 well beaten egg, salt to taste. Re-heat, and it is ready to serve.

6. *Chicken Ramakins.*—Boil drumsticks. When cooked, cut meat off and mix with 1 tablespoon cream, melt ½oz. butter, and stir in ½oz. flour. Mix with stock drumsticks were boiled in, stir until thick, add chicken and a little parsley. Grease some ramakin cases, sprinkle with breadcrumbs, put mixture in cases, sprinkle with more bread crumbs, put a piece of butter on each and bake until golden brown.

7. *Chicken Broth.*—Carcass and giblets of chicken, small piece of onion, 1 sprig parsley, 1oz. pearl barley, 1½ pints of water. Wash barley, put all ingredients into saucepan with a little salt. Simmer for 3 hours, then strain. (Secretary, Mrs. W. Pritchard.)

DO NOT NEGLECT THAT COLD.

Paper contributed by Mrs. Hampel at the May meeting of the Wilmington Branch:—

An ordinary cold may not be a very serious matter, but it inflames the tender lining membranes of the nose, and once this condition has set in, other colds are likely to follow. When once a child starts to have a series of colds, his appetite suffers, as well as his general virility and well-being; and often, after a time, enlarged tonsils and adenoids follow. These stand in the way of the child's general development until they have been removed. Ear troubles often follow as a consequence of bad colds, and even the teeth are affected in time, because constant mouth breathing prevents the proper formation of the jaw. Every mother should really look upon the common cold as an enemy to health and one that may bring many others along with it.

If a baby has a cold, one cannot do a great deal for him beyond keeping him quite warm and out of draughts; keeping his bowels well open, and giving a lighter diet than usual with frequent sips of water. His nose can be cleaned with a camel hair brush dipped in warm olive oil, and a little white vaseline should be rubbed into the root of the nose to prevent soreness. A healthy baby should throw off a cold quickly, and if he does not, he needs medical attention. Older children should be given light nourishing food and plenty of fluid—water, barley water, and fruit drinks. A child

whose head is stuffed up with catarrh will not need heavy meals, and is better without them. If the cold is very heavy, the weather severe, or if there is any temperature, the child is best in bed and out of draught in an airy room; and if he is kept warm, should throw the cold off quickly. The nose must be kept as clear as possible, and it is best to use paper hankies or scraps of soft, old sheeting which can afterwards be burnt.

It is important to teach children to blow their noses thoroughly, one nostril at a time, but a child with a cold should not be encouraged to blow too hard, for this sometimes has the effect of forcing the discharge into the cavities on each side of the bridge of the nose. *If there is a tendency to a tickling cough, it will be found that glycerine,* honey and lemon, or black-currant tea (made with jam or jelly and boiling water—all cheap, homely remedies) have a most soothing effect. Syrup of squills and tolu is also a good cough mixture that can be given throughout childhood. Sometimes, however, a cough is so persistent that nothing appears to check it, and often a child will cough through the whole night. In such cases, the best remedy is to paint the throat with a clean brush dipped in glycerine and tannin. It is not very pleasant, but it gets to the root of the trouble, and most children will submit to it if they are rewarded with a black currant lozenge or piece of barley sugar.

A chest cold needs a doctor's supervision, for with children there is always a risk of bronchitis. For a chest cough, glycerine, honey, and lemon is a good cough mixture; it is soothing, and seems to "cut" the phlegm. Rubbing the chest with camphorated oil will cometimes give relief, and is an old and helpful remedy.

A child with a healthy throat should not get a severe sore throat; when this occurs frequently, it is usually a sign that the tonsils need attention. But, sometimes a child will suffer from a red, inflamed throat after going out in a cold wind. It is always *best to isolate a child with a sore throat, for it may be an early sign of one of the* infectious ailments, and if a child has a throat with whitish patches on it, the doctor should be sent for. It may be a mild attack of tonsilitis, or septic throat, but it may *be something more serious.* However, a mild sore throat should clear up quickly if the child is kept warm and in bed if there is any temperature. Gargling is soothing and effective, and a mild carbolic gargle is usually given to any child who is old enough to be taught not to swallow. Glycerine lozenges can be given freely, and the diet should be very light and easily eaten—broth, beef-tea, a poached egg, or steamed fish, jelly, custard, grapes, and the rest. *Prevention.*—Feed the children well, keep them warm, provide good strong shoes, keep them away from crowded places and they should not catch cold. Teach them to breathe through their noses, how to blow the nose properly,

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provide clean hankies regularly, and impress upon each child that a hankie is a personal possession, and on no account to be borrowed. It is a good plan to teach every child to gargle from an early age. Gargling keeps the throat healthy, and greatly aids resistance to germ infection. Above all, it is best to have advice about a child who has a constant run of colds in spite of every care. The probability is that the nose and throat are not quite healthy, and often the simple operation for the removal of adenoids and tonsils will do a lot for a child, curing constant colds and improving his general health and development. If these precautions are taken, the little ones should go through the winter splendidly, and then if they do catch a cold it will not be nearly as severe, and one which they can quickly throw off.

A paper, "Lemons and Their Uses," was read by Mrs. Genders. (Secretary, Mrs. Cole.)

WARCOWIE.

Mrs. W. J. Sanders read a paper, "Jam Making," at the July meeting, which was attended by 9 members and 2 visitors. (Secretary, Miss L. Martin.)

HOUSEHOLD HINTS.

A Useful Fire Box.

Included amongst a number of "Useful Household Hints" which were given at the May meeting of the Balhannah Branch was the following:—

This labour saving hint is for a room which has a plain open fireplace. Such fireplaces are difficult to keep clean and spick and span, especially at this time of the year when one has a fire every day or evening. Take a petrol or kerosine tin, turn it on its side and cut it, full height at the back, and low in the front. Turn the front edge neatly (over a wire is a good plan, but not necessary). The hole through which the contents are emptied makes sufficient draught to ensure a good blaze. In the morning, nearly all the ashes will be safely in the tin, which is easily carried out and the ash dust on the hobs and mantel shelf is thereby almost avoided. If a basket grate is used a tray made from an old tin is useful for the purpose of collecting the ashes easily. After emptying the ashes the next fire may be set ready in the tin and carried in to the fireplace or left outside until it is required. When using the tin, the fire will burn sooner after lighting, than in an ordinary open fireplace. If something better is preferred and one of the men-folk is a handy man, he may have a spare length of sheet steel which can be made quickly into a fire box with a few rivets. There is no need to perforate the tin for more draught, and further by doing so one would not be able to save the ash dust. The tin will last a whole winter. This idea also has the advantage of saving the bricks from burning out so quickly, and is therefore an excellent labour saving hint. (Secretary, Miss D. Spoehr.)

"Household Hints" were also discussed by the O'Loughlin members at their meeting held on 16th April. Mrs. Mueller, who judged the hints, awarded Mrs. A. Kloeden first prize and Miss M. Kloeden second prize. The following are some of the hints submitted:—A lump of sugar added to the water used for washing oilcloth or linoleum gives it a brilliant and lasting polish. Heat the dry coffee before pouring on the boiling water. This brings out the flavour and a smaller amount of coffee is needed. To clean a burnt enamel dish, stand it out in the sun for a week or more, and it is surprising how easily it is cleaned. The sun bleaches the enamel and makes it quite white. To have a cool drink out in the paddock, fill the lid of the billy-can with water and rest it on t p of the billy, which must also have water in it. The water in the lid will be quite cool in a very short time on the hottest of days, even if stood in the sun, though the shade is better. A good remedy for cuts is to smear castor oil on the wound, and it will heal quickly. Put a little piece of soap in the blacklead when adding water to it to make a lather. This gives a good shine and makes the polish adhere to the stove. Wool that is to be kept for any length of time should be wound round a moth ball, and moths will not touch it. An onion poultice will soon relieve the worst earache. The onion must be partly baked. Moths can be kept away from furs and woollen materials by putting a piece of linen damped in turpentine in drawers and wardrobes. For colds take Elder flour 4 or 5 times a day, with or without sugar, according to taste. It will speedily give relief. When washing the separator add 1 teaspoon of borax to the water. It removes all bad smells caused by milk in hot weather. When boiling cabbage, place a colander to top of the saucepan; this allows the steam to escape, but prevents the cabbage from boiling over. The potatoes can be steamed at the same time by putting them in the colander. To get rid of "rope" in bread, burn a piece of old leather either in the stove or in the vessel where the bread is kept. This is a certain remedy. (Secretary, Mrs. J. Foggo.)

Still another Branch—Pinnaroo—devoted a meeting on 7th June, at Mrs. E. Staker's homestead, to the subject of "Household Hints." The use of brown paper when pressing ties, trousers, pleats, &c., is more effective than a damp cloth. A quick and simple way of separating the yolk of an egg from the white is to crack the egg into an ordinary pie funnel. The white will flow through without breaking the yolk. A penny placed in a vase of flowers will make them last twice as long. To stop oilcloth from cracking, rub it with a mixture of oil and vinegar in equal quantities. This is specially useful in a room where the heat of the fire dries the oilcloth.

Woodworms.—A new way of destroying woodworms in furniture is to mix paraffin and castor oil and apply generously, dropping it into the hole with the quill end of a feather. A piece of butter added to the milk when making a blancmange will make it turn out from the mould far more easily.

Kitchen Hints.—Labels on kitchen tins will not be affected by the steam and peel off if the gum on the back is moistened with glycerine instead of water. To clean aluminium, wash each article with soap and water then rub it over with a piece of flannel dipped in pure olive oil. Fabric gloves should be washed on the hand in good warm soapsuds. Rinse them in clear water, and finally in slightly soapy water, and dry them on a turkish towel. Tomatoes which have become soft and over-ripe can be made quite firm again if they are placed for a short time in a bowl of cold water, to which a little salt has been added. Damp salt is very useful for cleaning tall glass vases, decanters, and enamelware. To remove paint stains, first soak the stain with turpentine to soften the paint, then add ammonia. Brush this now and again and wait for half an hour. After this wash in very cool soapy water containing ammonia, and the stain will gradually disappear. A piece of silver paper from a chocolate put on one side of a new piece of soap will stop all wastage of soap while it is lying on the soap dish. It is also very pleasant to hold and nearly doubles the life of the tablet.

Removing Stains.—Table stains, such as tea, coffee, wine, and fruit should, after washing, be well rubbed with household ammonia and then treated with hydrogen peroxide in the proportion of 1 part to 100 parts of water. Rust, ironmould, and ink yield to salts of lemon rubbed lightly in with a smooth stick of wood. The stain should rest over a vessel containing boiling water. It may be necessary to repeat the process, but a final thorough soaping and rinsing in ammonia water should be given. Oil, tar, and grease yield most easily to benzol after steeping in boiling water. Apply around centre of stain. *Benzol is highly inflammable, and the work should be carried on in open air.* Blood stains should be washed in tepid soda water. If that fails, repeated applications of ammonia should be tried. Paint stains should be dealt with immediately by applying benzol, and, after it has been well rubbed in, the linen should be washed in hot soapy water. When boiling split pea soup, always add a slice of bread; this prevents the peas from sinking to the bottom of the saucepan. Four cups of water and 2 tablespoons methylated spirits is a good solution for washing mirrors. If soot should fall on the carpet, cover it thickly with salt. The salt and soot can then be swept up without damaging the carpet. (Secretary, Miss Mattiske.)

CAKE MAKING HINTS.

"Cake" was the subject of a meeting of the Sheoak Log Branch on 1st August. Members supplied various recipes. The following paper was read by Mrs. Bowden:—

"Cake-making is an art in itself, and there are indeed many recipes, some appearing just duplicates of others, but on examination it will be found that slight differences do exist either in quantities or methods, and every cook knows that a slight variation may make all the difference.

The baking of a cake might well be said to be the most important part of the entire process, since so much of the success depends upon it. Therefore, be sure the oven is at the right temperature for the type you intend to bake. In the country, where we are compelled to use wood stoves, it is wise to light the fire about an hour before one intends to bake, and in this way the oven is evenly heated.

Never attempt to cook different kinds of cakes in an oven at the same time, as different types require different treatment. Small or layer cakes require a hotter oven than a loaf cake, because they must bake quickly before drying out; a large cake must bake more slowly, so that the heat may penetrate to the centre before too hard a crust is formed on the outside. The heat required for a sponge should be higher than that used for fruit cakes, and, on the other hand, slightly cooler than is required for scones, pastry, little or rock cakes. An oven in which scones or little cakes have just been successfully and quickly baked is ideal for a sponge, after the fierce heat has burnt down. In the case of sponges, too hot an oven browns the top at once, and interferes with the normal rising, while too cool an oven delays the rising, and the result is disappointing. Do not open the oven door for at least five minutes; then only for a

glance. It is a mistake to put on wood whilst cooking a sponge—and, indeed, most other cakes—as it generally spoils the cooking. It is always wise to place the cake as near the centre of the oven as possible, as this gives a more even temperature, and thus ensures more even rising.

The baking of large cakes may be divided into four quarters. During the first quarter the cake begins to rise; during the second it begins to rise and to brown; during the third it finishes rising and continues to brown; the fourth it finishes browning and shrinks from the sides of the tin. It is usually a mistake to move a cake whilst cooking, as it is apt to cause the fragile cell walls to break, and then the cake will fall. If baking unevenly, it is better to move it before the crust is formed.

Open and close the oven door very carefully. Before starting to mix, prepare the tins, paper, &c., and then have all the ingredients ready at hand, because once the mixing is started it is a mistake to run here for something and there for something else. Preferably grease the tins with butter, or with some types they are better lined with greased paper. Medium high tins for sponges are preferable to shallow ones, as they allow the cake to rise to its full height without spilling; on the other hand, it is a mistake to have too high a tin, as this prevents the free circulation of the air. It is always wise to weigh ingredients in preference to measuring. There are two classes of cakes, butter or sponge, and all recipes are on one of these foundations. A shortened cake may be stirred or beaten, or mixed in any other way, providing all the ingredients are thoroughly blended. The usual practice is to cream butter and sugar, add beaten eggs and beat, then flour, milk, &c., and beat again. Careless mixing results in a coarse cake, long beating gives a fine, but heavy grain, while a small amount of beating gives a light and delicate texture. The whole aim in beating a sponge is to introduce as much air as possible in each separate process. Some use S.R. flour in place of plain flour and raising powders. Its use however, is not recommended, as it contains too high a proportion of raising for a cake that should be well beaten. The cake will rise well but it will be coarse in texture, and not the soft fluffy specimen you desire. Quite a number of cooks use no raising at all, when making sponges. They depend on extra air incorporated by long beating. Most people add melted butter, which is recognised as optional, but generally hot water and milk are added. This also assists in the rising and keeps the cake moist and fresh.

When eggs and sugar are beaten sufficiently, fold in sifted flour and raising powders. On no account must the flour be beaten in, and do not give a single stir more than necessary. Lastly with a light touch add melted butter, water or milk, or any desired flavouring. Testing with a skewer is not necessary. Just press top lightly and if no impression is left, the cake is cooked. Sponge rolls are preferably cooked on greased paper in bottom of oven with the heat slightly higher than when cooked in sandwich tins. To be able to recognise the cause of success or failure is beneficial in cake making. Success depends upon a well proportioned recipe, careful weighing of ingredients, and right temperature of the oven. A poor specimen is often due to too slow an oven, too much sugar or fat causing heaviness with too little flour, thus a badly proportioned recipe, and careless mixing all tend to give poor results. Recipes for cocoanut puffs, German nut cake, nut cake, Berlin tart, walnut cream cake, ginger sponge, and Henley cake were supplied by the writer. (Secretary, Miss K. M. Koch.)

"Suet Pastry for Winter Dishes" was the subject of the following paper by Mrs. B. Schenscher at a meeting of the Monarto South Branch on 17th August. While the cold winter days are with us dishes made with suet pastry are very appetising and nourishing. In the popular form of boiled or steamed pastry it is one of the best means of spreading a too-small quantity of meat. What is more appetising on a cold wet day than a meat pudding rich with gravy and vegetables or a homely "roly-poly" oozing with hot jam or apples? Here is a reliable recipe for the pastry:—½lb. S.R. flour, pinch of salt, 3ozs. suet (or lard may be used), and enough cold water to make a nice firm dough. Put the flour in a basin, add the finely shredded suet and mix with a knife, gradually adding the water. Roll out to any required shape. When making the pastry for a fruit pudding or "roly-poly", milk may be used for the mixing instead of water. A very nice pudding is as follows. Line a pudding basin with pastry, half fill with rhubarb, add just a little water and plenty of sugar, then cover with pastry. Now put a plate on the basin, tie down with a cloth, and boil for 2½ hours. This is delicious served with cream, either hot or cold. The pastry can also be used for dumplings. For plain ones to serve with treacle or jam, roll the pastry into small balls, roll them in flour, and drop into fast boiling water. Boil 15-20 minutes according to size. These dumplings make a good substitute for potatoes by adding extra salt, pepper, chopped onion, and parsley and roasting them together with meat. When there is some cold meat left over from the previous day, a stew may be made with vegetables and onion. Half an hour before it is to be served cover with pastry and either steam or bake it. A tasty rabbit pie may be made by first boiling

your rabbit in salt and water till tender, then taking the meat from the bones and putting in a pie dish layers of the meat, carrots, turnip, potatoes, and onions, with salt and pepper to taste, and steaming on top of the stove until the vegetables are tender. Next put on your pastry crust and bake until done. Meat that would only serve one person may be made to serve the whole family by making it into a pie or "*roly-poly*". *The very newest cook need have no hesitation in attempting to make* this form of pastry, and it is also economical. (Secretary, Mrs. F. W. Liebelt.)

THE HOME LIBRARY.

The above was the subject of the following paper by Mrs. L. Pascoe at a meeting of the Wepowie Branch on 7th August:—The home library is mostly limited to a few books, and these are not always well chosen or selected for their literary value or educational help. The home library too often consists of fiction of a nondescript character, and our children are not brought into touch and given a taste for literature. Some parents even forbid their children to read books with the idea that it teaches them to be indolent and neglectful of their work; thus their minds are starved, and they are robbed of a rich inheritance. We are surprised at this, because the schoolmaster has been abroad for so many years teaching the value of education. Education consists in training the hand, eye, and heart, as well as the brain. The training of girls and boys to read good literature rests very largely with parents in selecting and supervising their reading. If the home library contains only a few books they should be well chosen and selected from our best authors, with the view of furnishing the mind with food for building up the character of men and women. In reading good books we not only get a pleasant pastime, but the mind is enriched and our hearts *made bigger so that sympathy, kindness, toleration, and love will reign supreme in the* human breast. In the home library there should be books for girls and boys; books of adventure are always interesting to young people, but do not encourage the penny *dreadful* or the *fourpenny* detective type. Books by Henty and Conan Doyle are instructive and thrilling for boys. The home library should contain books of the tact, push, and principle type, such as *Samuel Budget, the Successful Merchant,* and biographical works, Shakespeare, Tennyson, Longfellow, and a good dictionary; also a home doctor's book should be found in every home library.

1935 CALENDAR 1935

SEPTEMBER

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OCTOBER

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DECEMBER

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1936 CALENDAR 1936

JANUARY

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NOVEMBER

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DECEMBER

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● FULL MOON

No home library should be considered complete without a *Bible,* apart from our belief that it is the inspired Word of God, its moral and spiritual teaching is of untold value. The literary merit of the Bible surpasses that of any other book. All great literary writers seem to be well acquainted with this Book. Before I conclude I will mention a few of the authors and books suitable for all ages:—*Fairy Tales for Tiny Tots;* for the older girls and boys, school annuals and adventure stories of all descriptions; for girls just in their teens, the Anne Books, the Pollyanna Books, Louisa M. Alcott, and Ethel Turner. The following are suitable for young ladies:—Florence Barclay, Temple Bailey, Gene Stratton Porter. For boys, Mary Grant Bruce, Edward Elliss and some of Zane Grey's. For older people, E. P. Roe, Harold Bell Wright, and Augusta J. Evans Wilson. (Secretary, Miss E. Roche.)

OTHER REPORTS RECEIVED.

Branch.	Date of Meeting.	Attendance.	Subject.	Secretary.
			WOMEN'S BRANCHES	
Eurelia	17/7/35	16	Annual Meeting	Mrs. E. P. Wall
Mangalo	10/7/35	15	Recipes	Mrs. F. Coles
Mundalla	1/8/35	9	Annual Meeting	Miss M. Fisher
Balumbah	31/7/35	10	Annual Meeting	Miss H. D. Jericho
Narridy	3/8/35	23	Rug Making Demonstration—Misses V. and L. Roberts	Miss B. J. Reynolds
Coonawarra	17/7/35	25	Annual Meeting. Exhibition of Women's Work	Mrs. O. M. Skinner
McLaren Flat	1/8/35	12	Problem Afternoon	Mrs. B. Powell
Taplan	24/7/35	13	Address—Poultry Expert	Mrs. W. Flynn
Saddleworth	6/8/35	8	Annual Meeting	Miss G. E. Frost
Pinnaroo	2/8/35	21	Annual Meeting	Miss N. A. Mattiske
Snowtown	2/8/35	50	Rug Making Demonstration—Mrs. E. L. Orchard	Mrs. A. Hocking
Penola	7/8/35	23	Annual Meeting	Mrs. F. J. Kidman
Wilmington	8/8/35	9	Papers by Mrs. Davison and Secretary	Mrs. P. Cole
Wasleys	1/8/35	40	Cooking Competition	Miss J. Braun
Morchard	14/8/35	10	Special Meeting—Congress	Miss F. A. Brown
Coonalpyn	14/8/35	19	Butter Sponge Cake Competition	Miss E. E. George
Williamstown	7/8/35	7	Annual Meeting	Mrs. G. E. Cundy
Mudamuckla	9/8/35	16	"Care and Feeding of Children"—Mrs. Noske	Mrs. C. H. Kuhlmann
O'Loughlin	13/8/35	10	Question Box	Mrs. E. E. E. Lutz
Eurelia	14/8/35	9	Question Box	Mrs. E. P. Wall
Balumbah	11/8/35	15	Special Meeting (Third Anniversary Dinner)	Miss H. D. Jericho
Tantanoola	7/8/35	12	"Biscuits"—Mrs. Pycroft	Mrs. Gus. Altschwager
Wilmington	16/8/35	25	Address—Miss E. Campbell	Mrs. P. Cole
Clare	3/8/35	16	Exchange of Plants, and Question Box	Mrs. A. Pollock
Kangarilla	15/8/35	37	"American Afternoon"	Mrs. C. Steer
Sheoak Log	21/8/35	250	Annual Social	Miss K. M. Koch
Wirrabara	15/8/35	7	Annual Meeting	Mrs. A. Curtis
Balhannah	21/8/35	19	"Home Devices" Competition	Miss D. Spoehr
Gladstone	20/8/35	65	"Women and Children of Russia"—Miss Bromham	Mrs. L. J. Sargent
Kybybolite	13/8/35	18	"Rock Gardens"—Mrs. E. Schinckel	Mrs. W. D. Kekwick
Taplan	16/8/35	11	Annual Meeting. "Knitting"—Miss E. Condon	Mrs. W. Flynn